FIG. 1

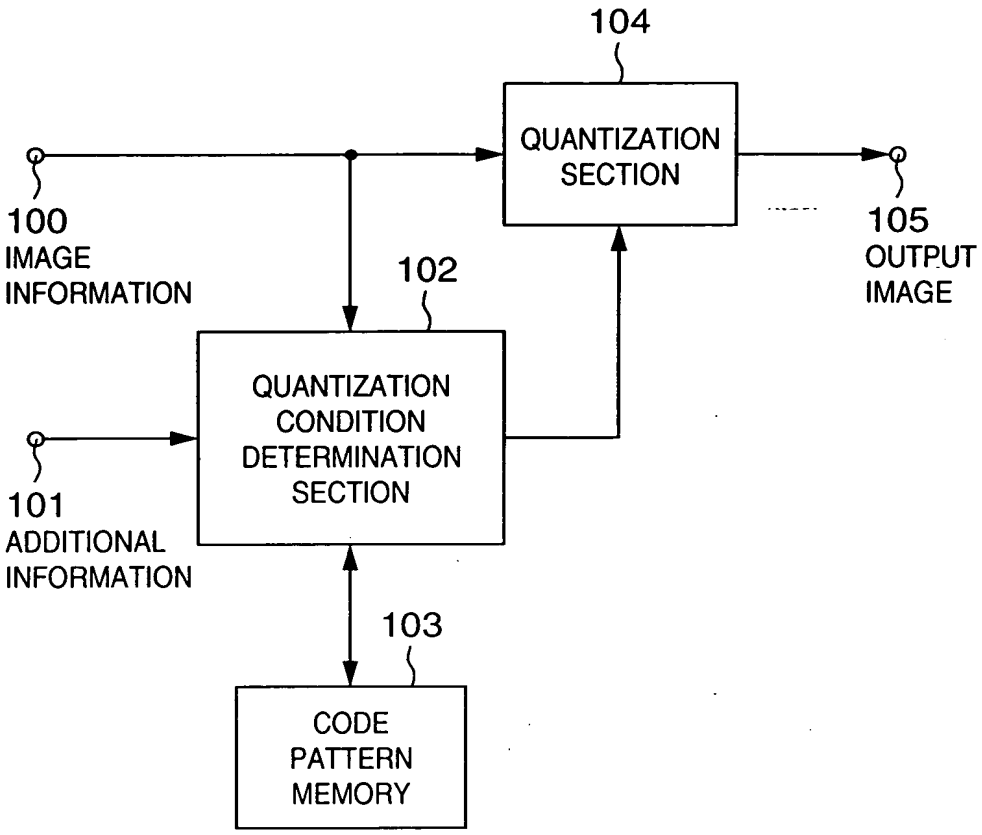


FIG. 2

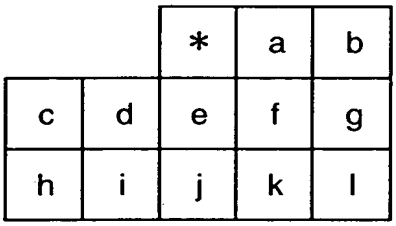


FIG. 3

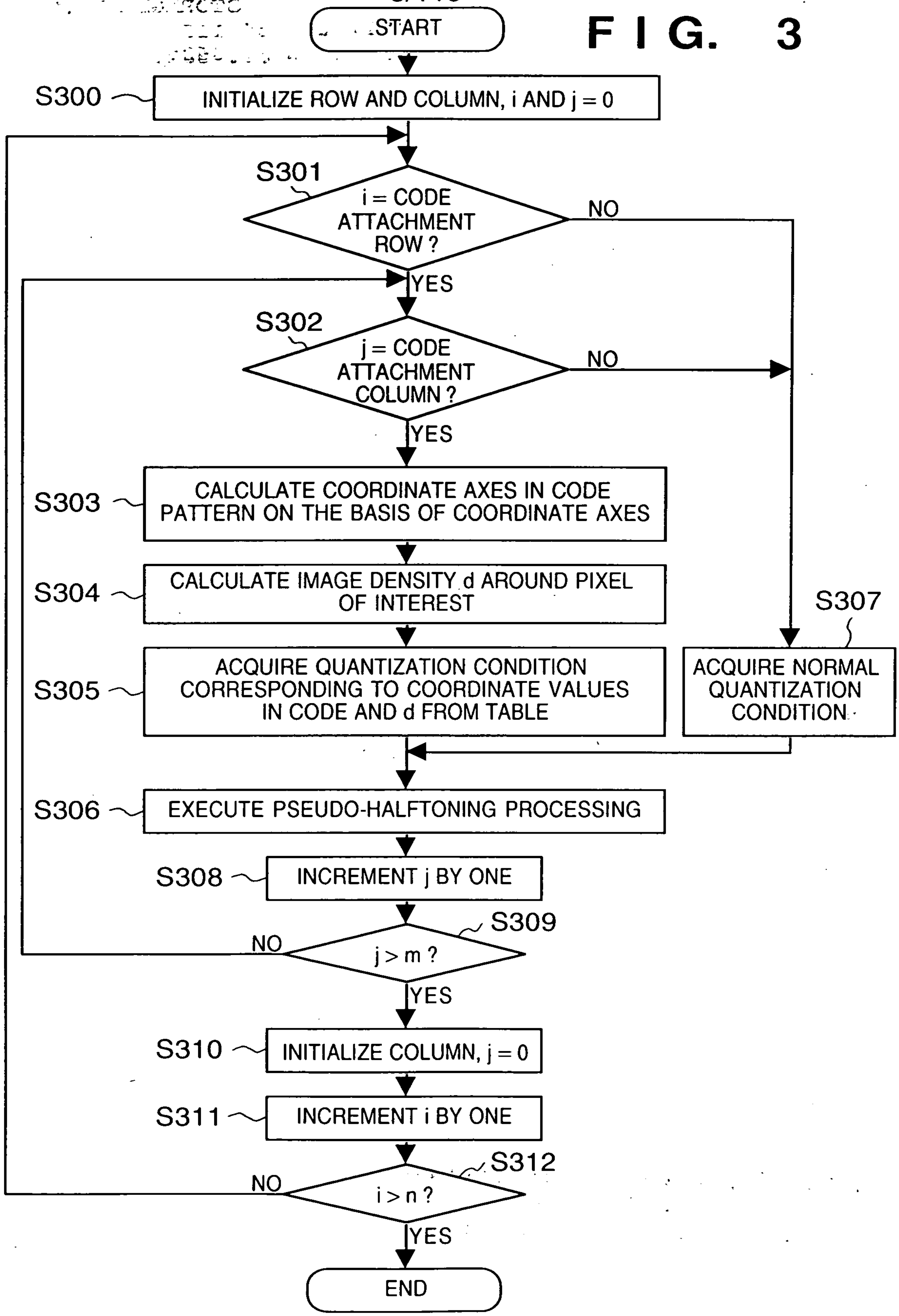


FIG. 4

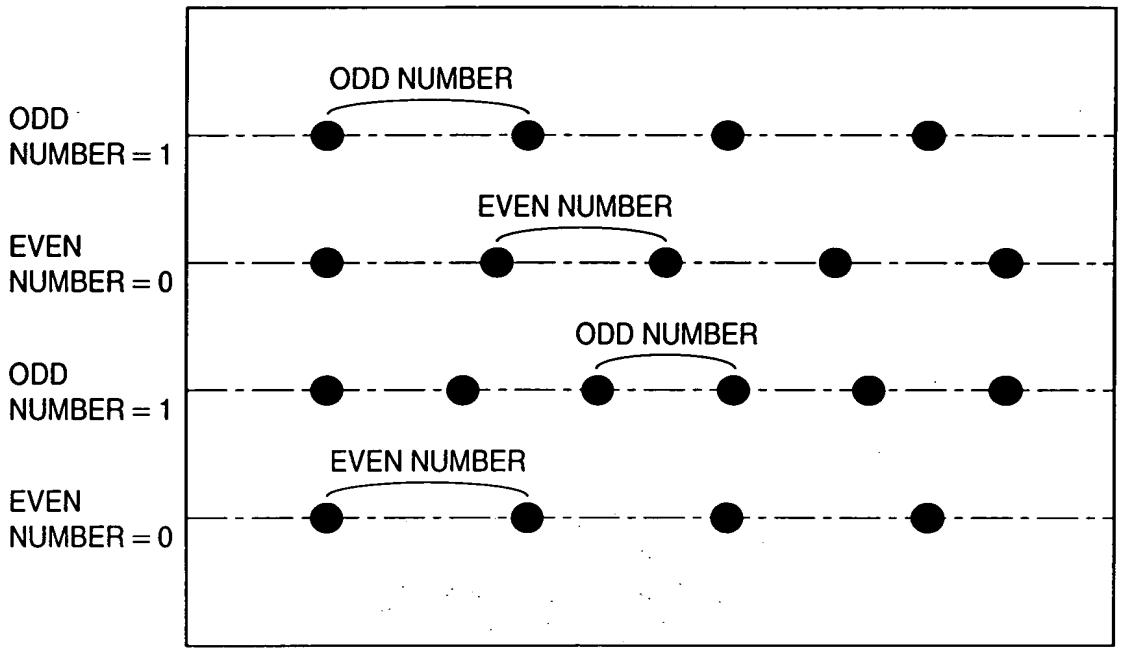
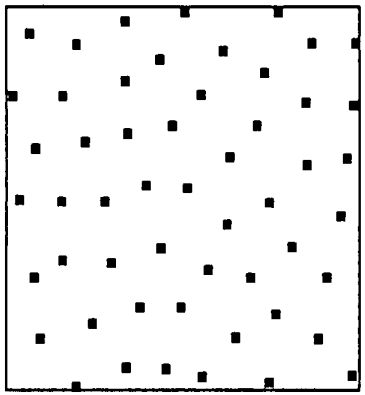
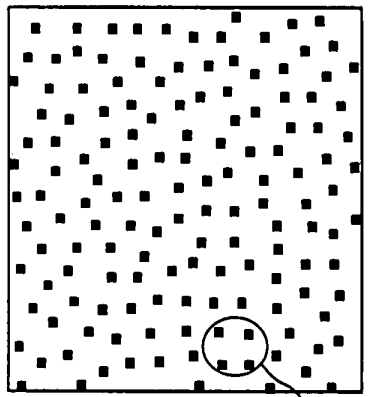


FIG. 5A



DENSITY 5/256

FIG. 5B



DENSITY 15/256

FIG. 6

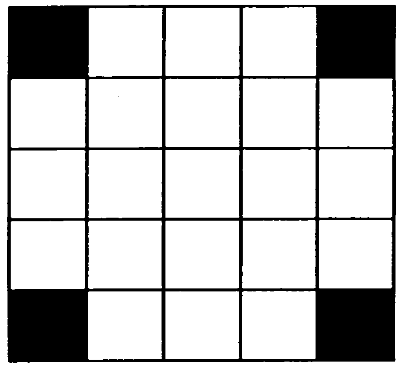


FIG. 7

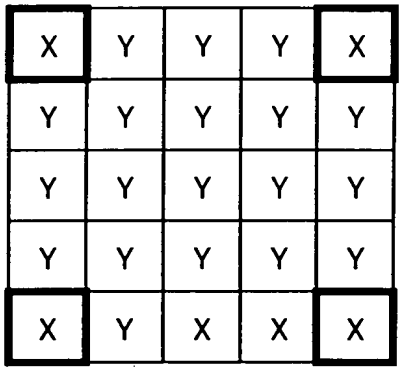


FIG. 8B

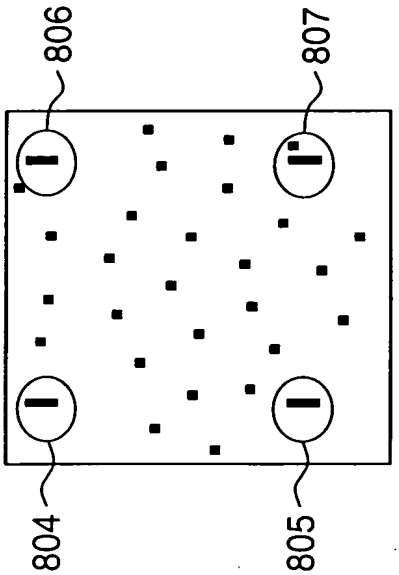


FIG. 8A

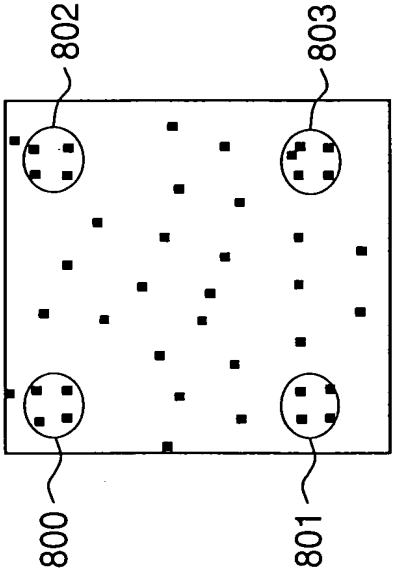


FIG. 9

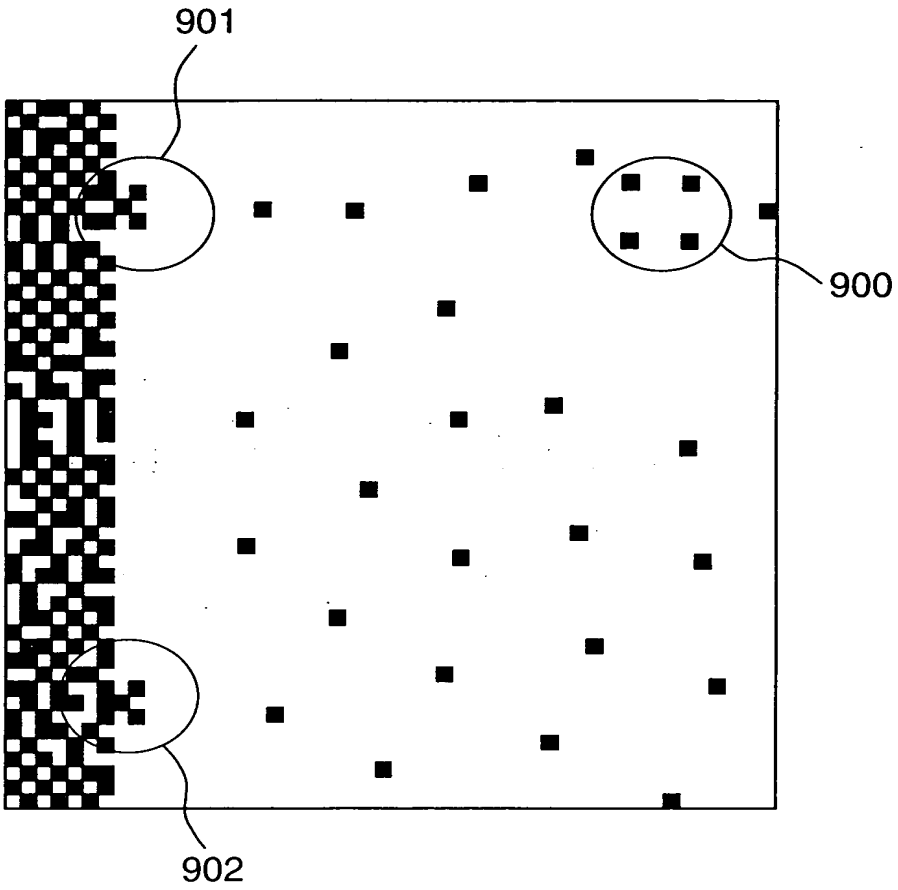


FIG. 10

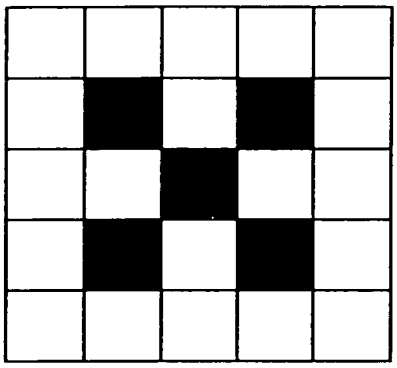


FIG. 11

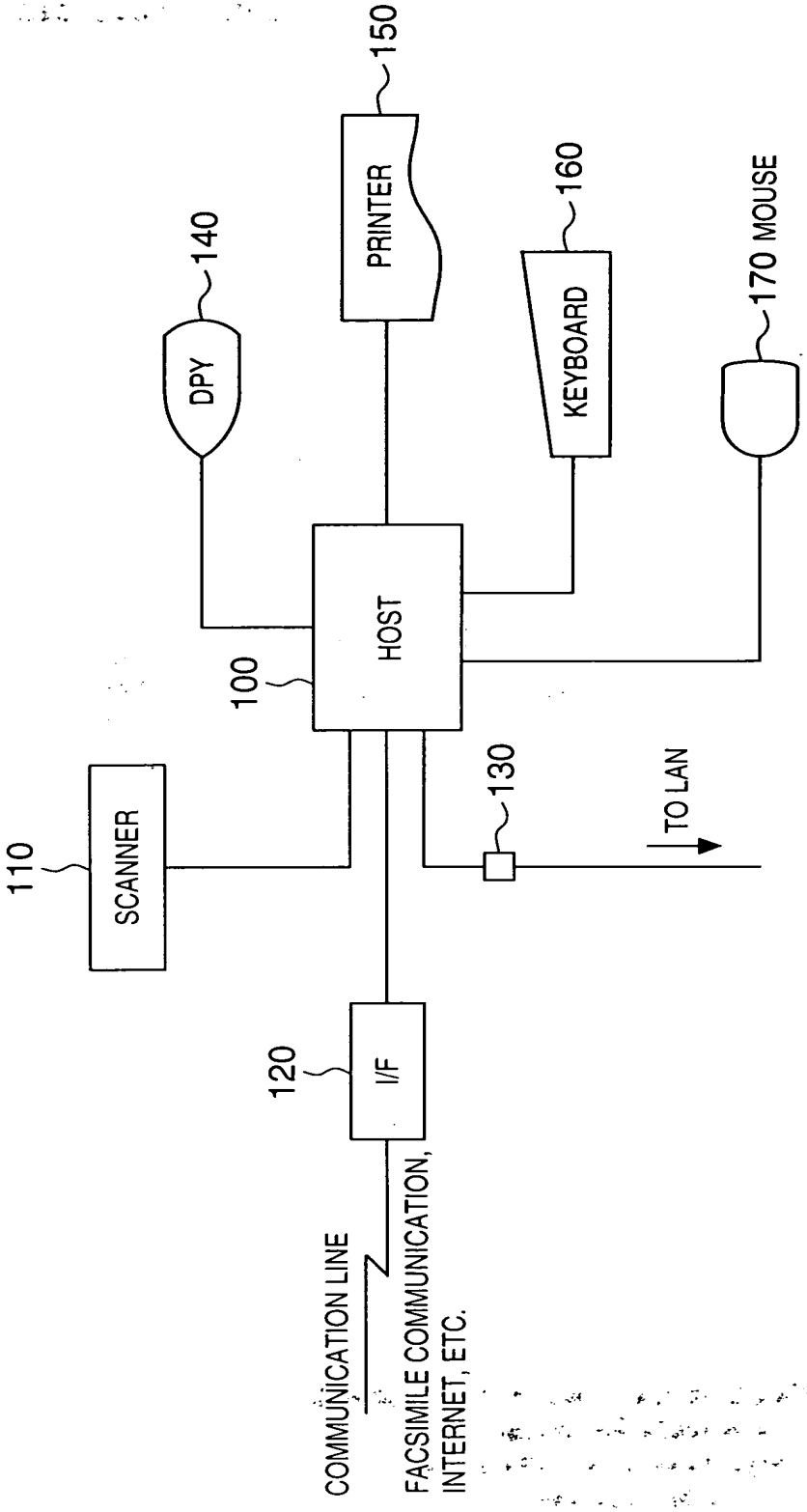


FIG. 12

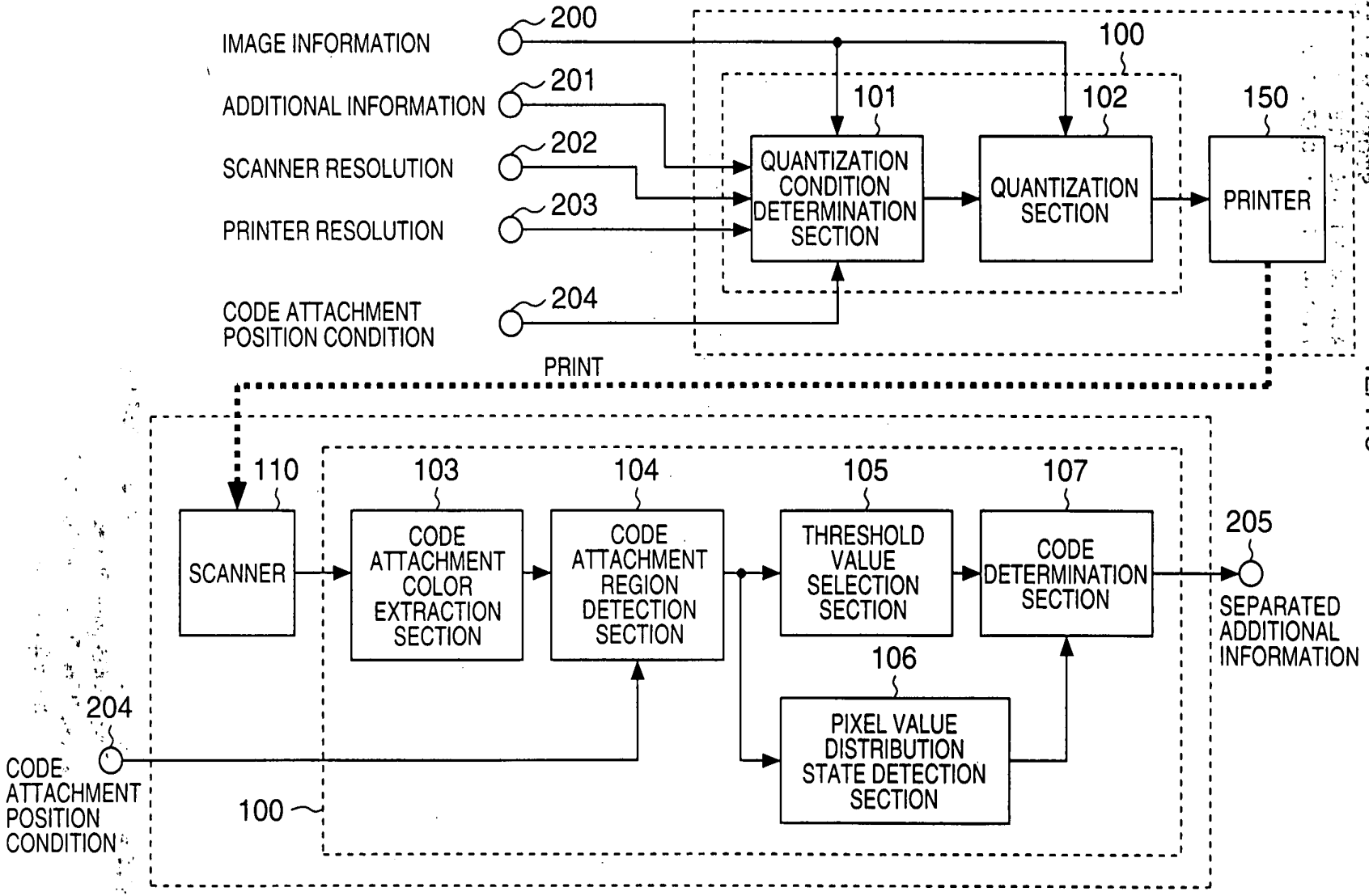


FIG. 13

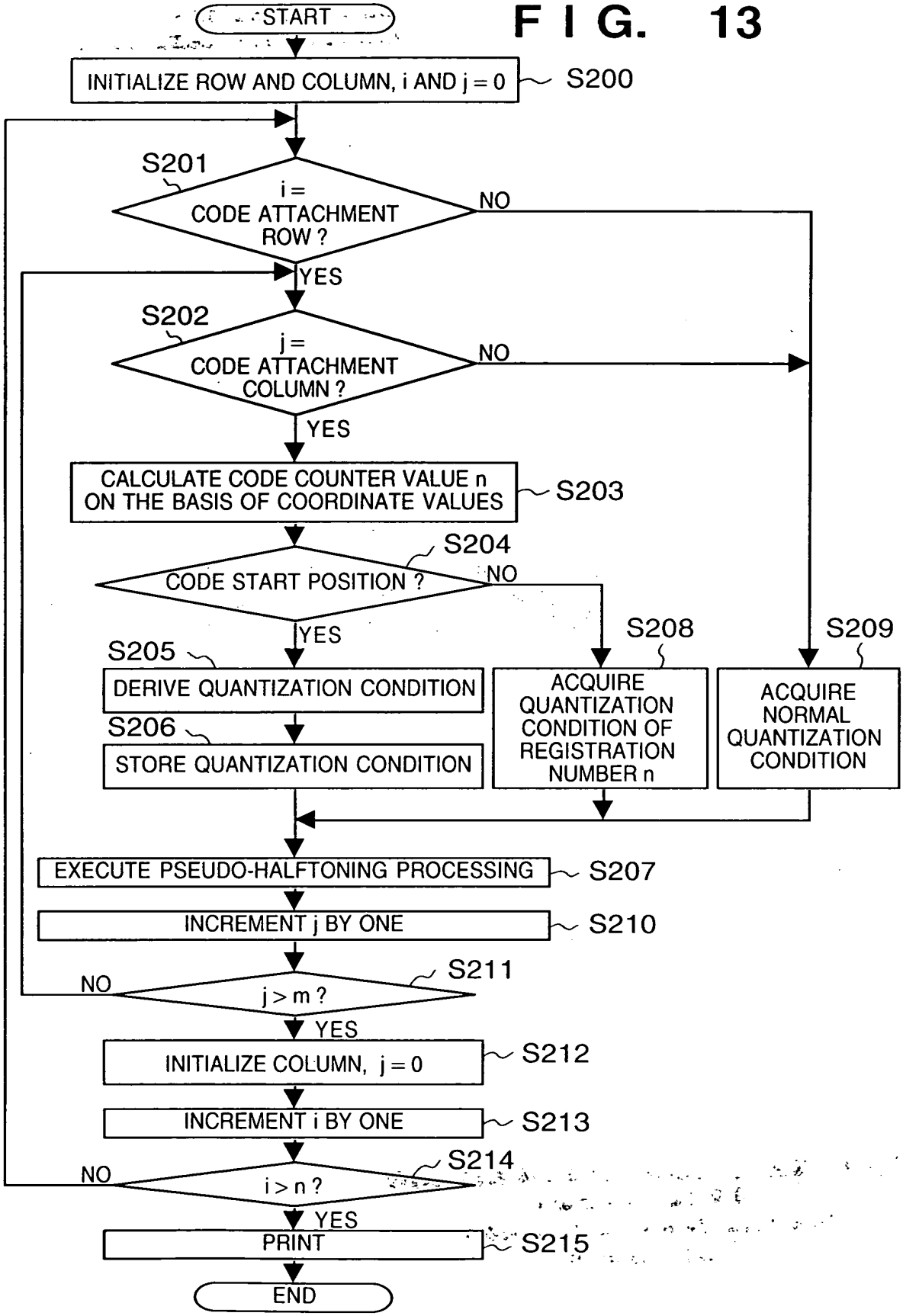


FIG. 14

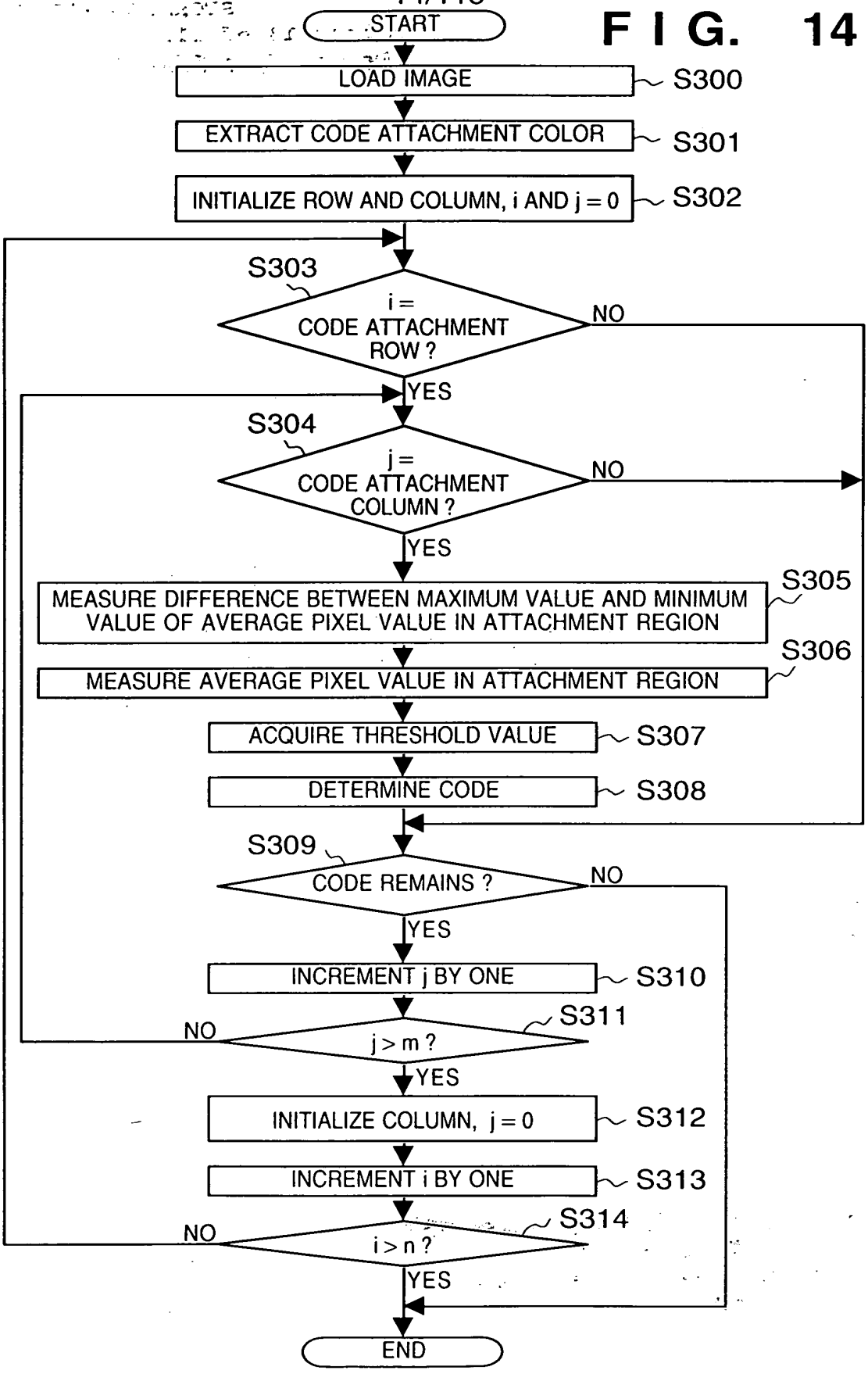


FIG. 15A

128	128	128	128	128	128	128	128
128	128	128	128	128	128	128	128
128	128	128	128	128	128	128	128
128	128	128	128	128	128	128	128
128	128	128	128	128	128	128	128
128	128	128	128	128	128	128	128
128	128	128	128	128	128	128	128
128	128	128	128	128	128	128	128

FIG. 15B

255	0	255	0	255	0	255	0
0	255	0	255	0	255	0	255
255	0	255	0	255	0	255	0
0	255	0	255	0	255	0	255
255	0	255	0	255	0	255	0
0	255	0	255	0	255	0	255
255	0	255	0	255	0	255	0
0	255	0	255	0	255	0	255

FIG. 15C

0	255	0	255	255	0	255	255
255	0	255	0	0	255	0	0
255	0	0	0	0	0	255	255
255	255	255	0	0	0	255	0
0	255	255	255	255	255	255	0
0	255	0	0	0	255	0	255
255	0	255	255	0	255	0	255
0	0	255	0	255	0	255	0

401
QUANTIZATION VALUES WHICH APPEAR TO MAINTAIN DENSITY

400
ARTIFICIALLY GENERATED QUANTIZATION VALUES

FIG. 16

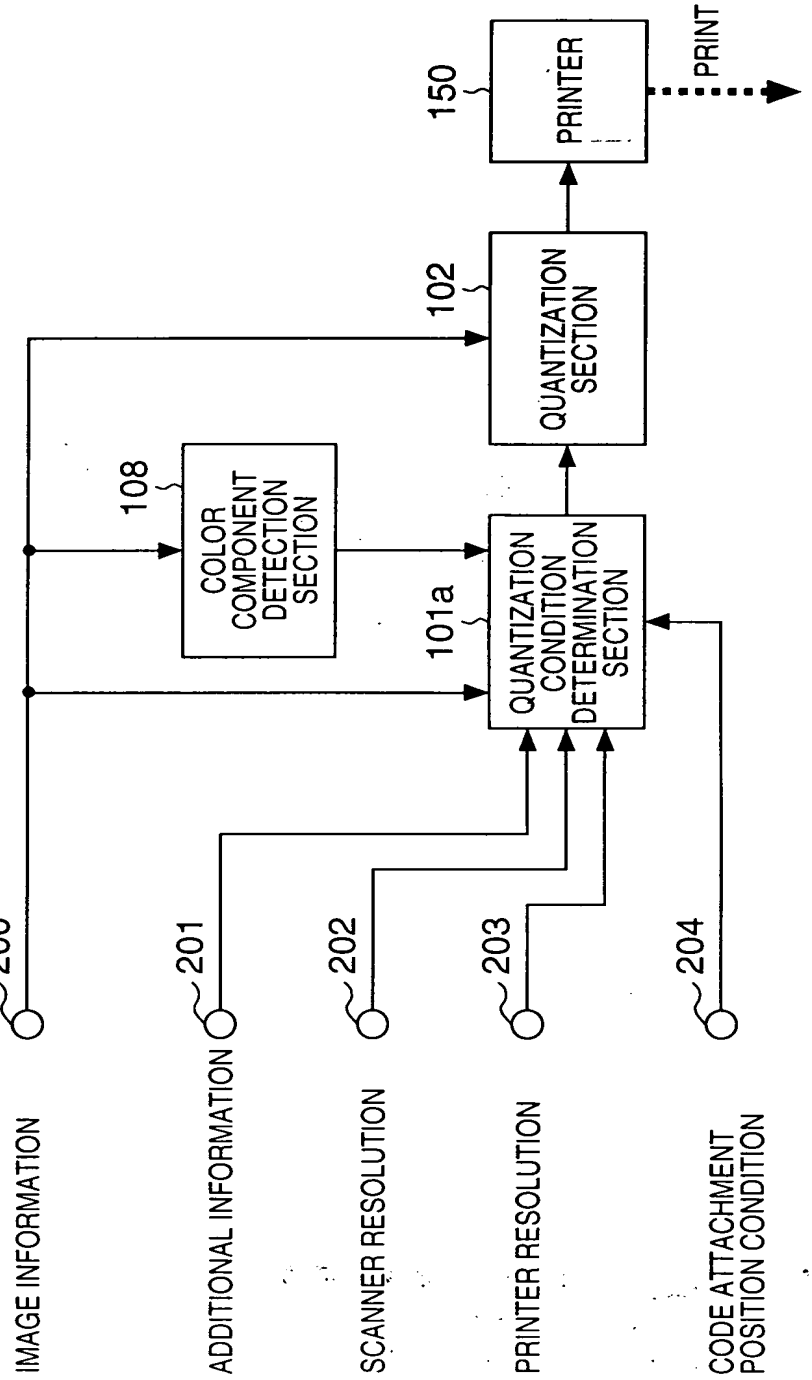


FIG. 17

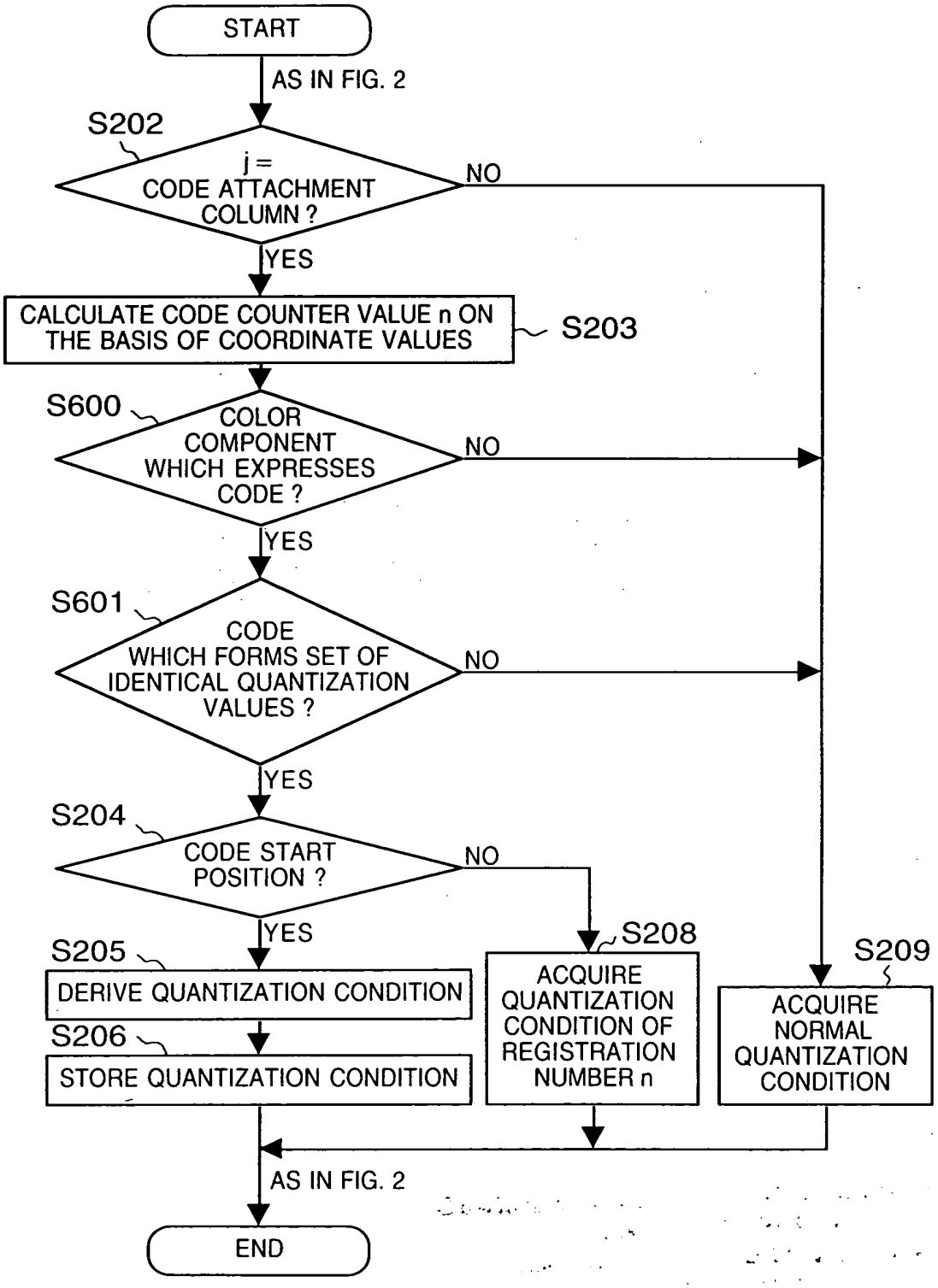


FIG. 18

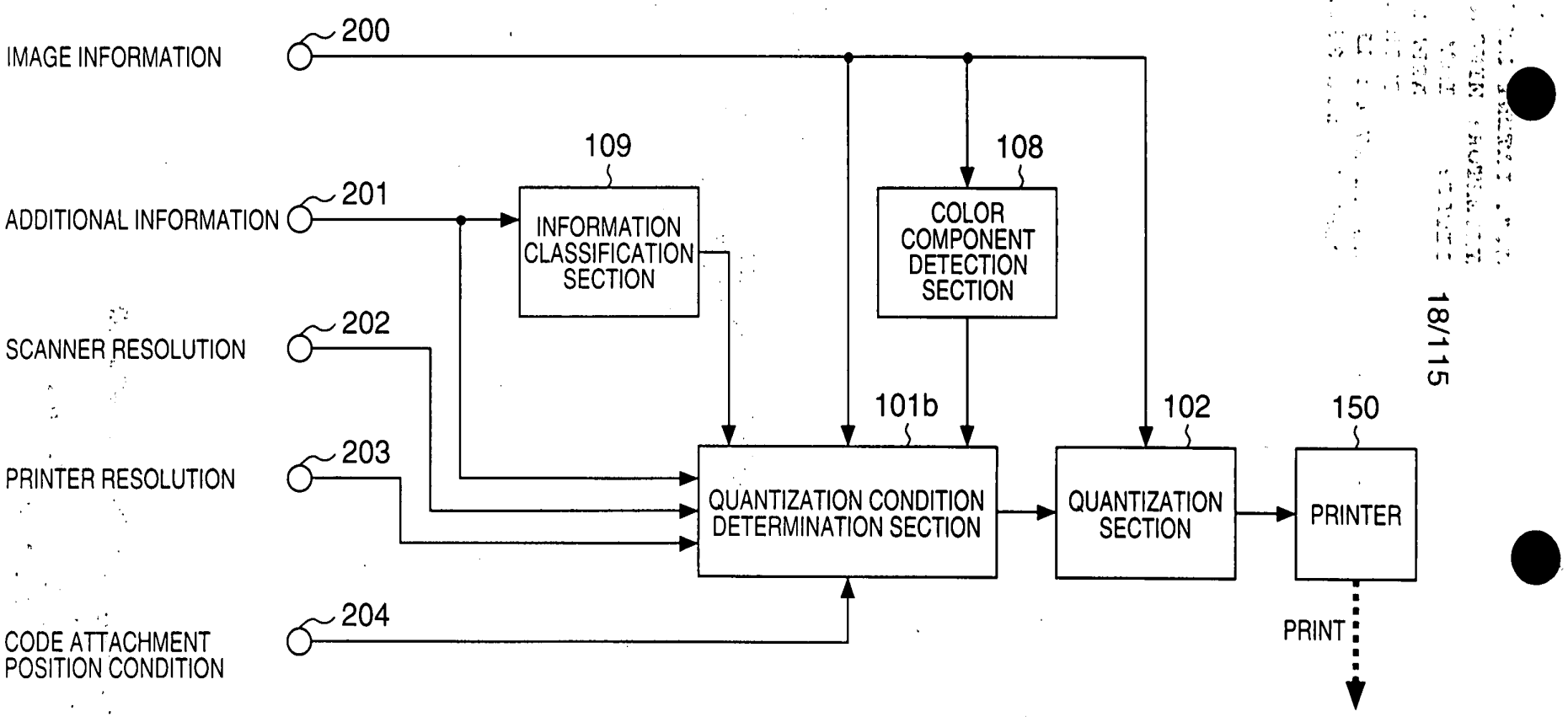


FIG. 19

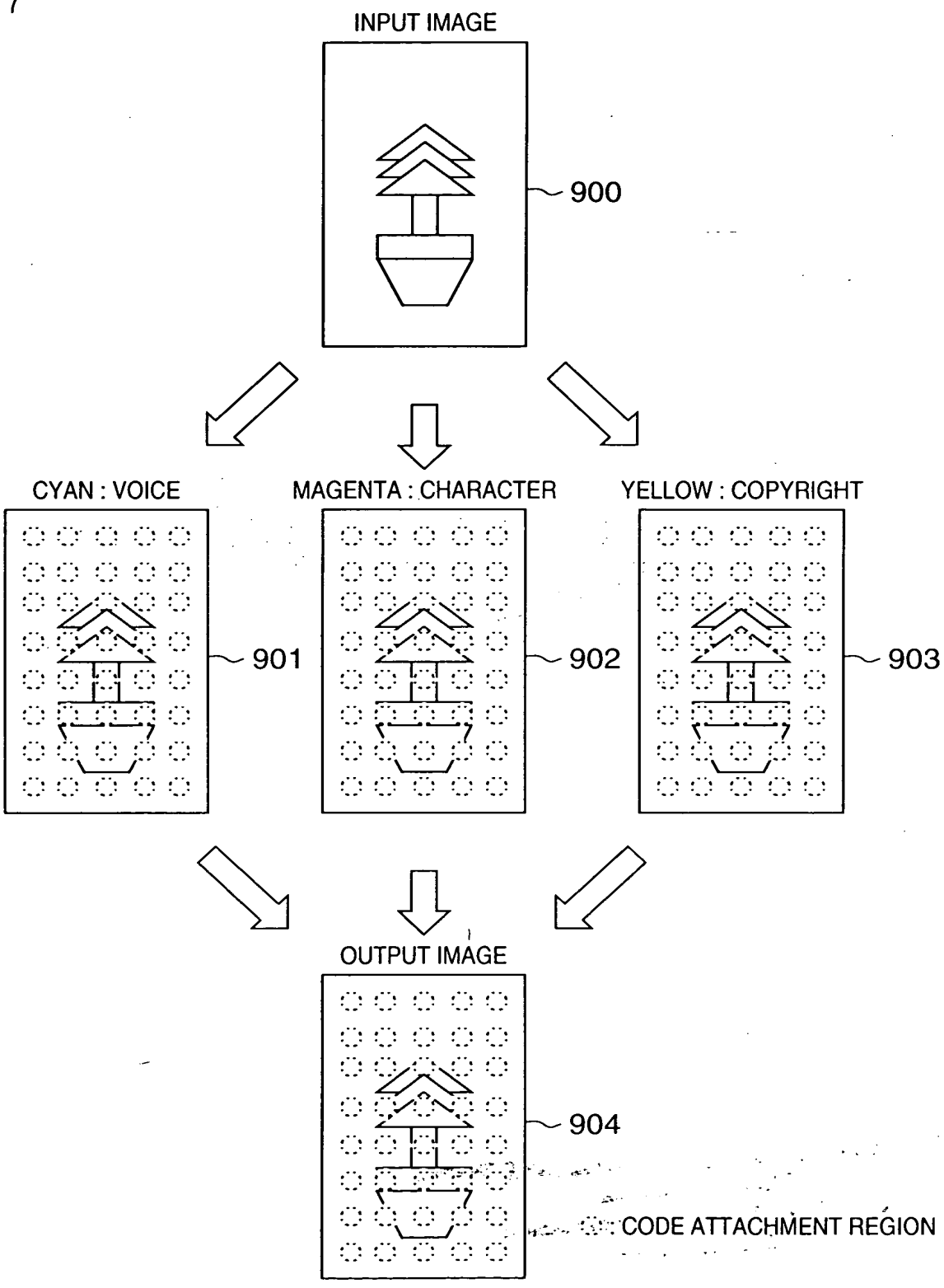

INPUT IMAGE
900
CYAN : VOICE
MAGENTA : CHARACTER
YELLOW : COPYRIGHT
901
902
903
OUTPUT IMAGE
904
CODE ATTACHMENT REGION

FIG. 20

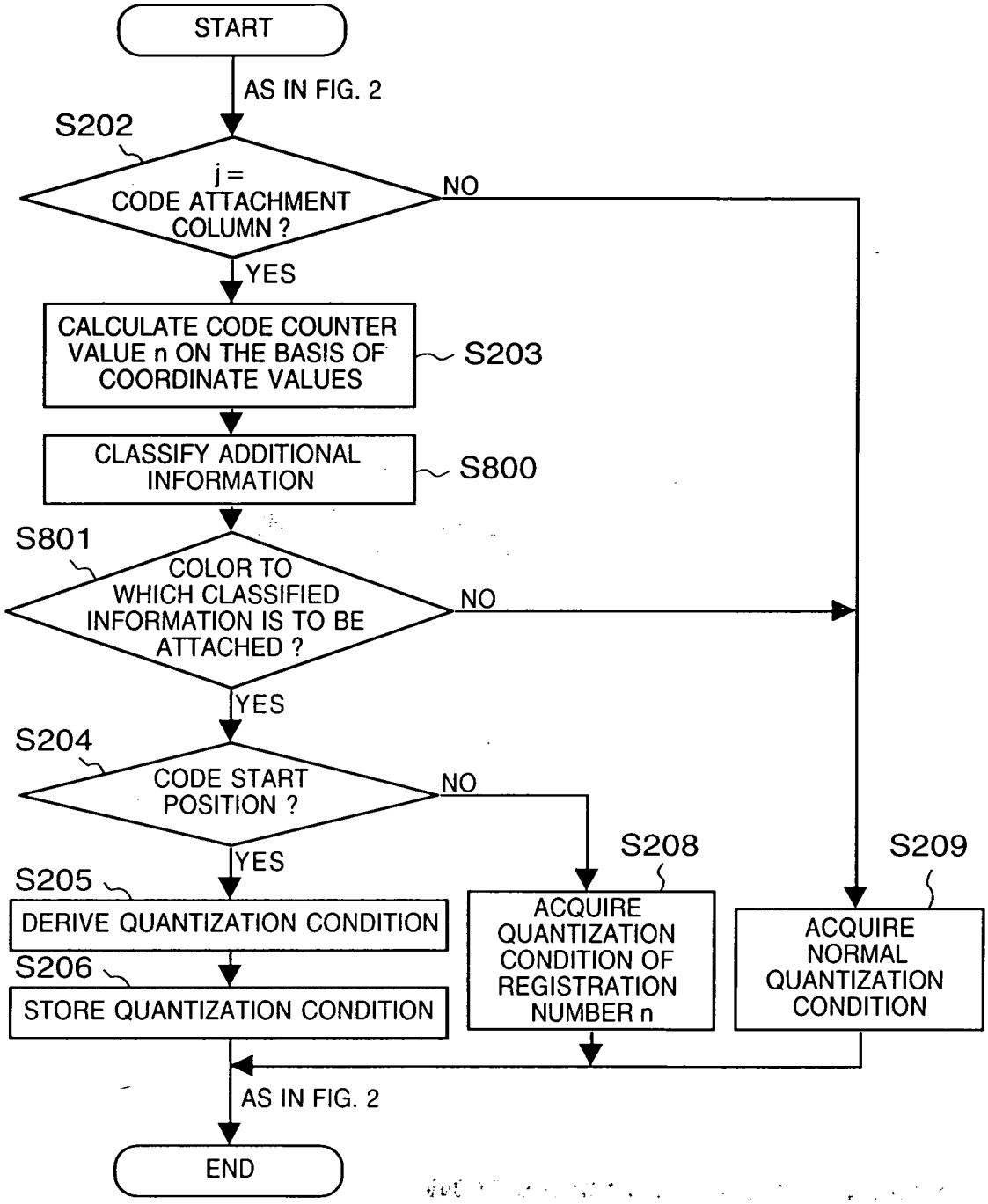


FIG. 21A

a1	a2	a3	a4	a5	a6	a7	a8
a9	a10	a11	a12	a13	a14	a15	a16
a17	a18	a19	a20	X	X	a21	a22
a23	a24	Y	Y	X	X	a25	a26
a27	a28	Y	Y	a29	a30	a31	a32
a33	a34	a35	a36	a37	a38	a39	a40
a41	a42	a43	a44	a45	a46	a47	a48
a49	a50	a51	a52	a53	a54	a55	a56

FIG. 21B

0	255	0	255	255	0	255	255
255	0	255	0	0	255	0	0
255	0	0	225	0	0	255	255
255	0	255	225	0	0	255	0
0	255	255	255	255	0	255	0
0	255	0	0	0	255	0	255
255	0	255	255	0	255	0	255
0	0	255	0	255	0	255	0

1000
REGION HAVING IDENTICAL QUANTIZATION VALUES

1001
REGION HAVING IDENTICAL QUANTIZATION VALUES

FIG. 22

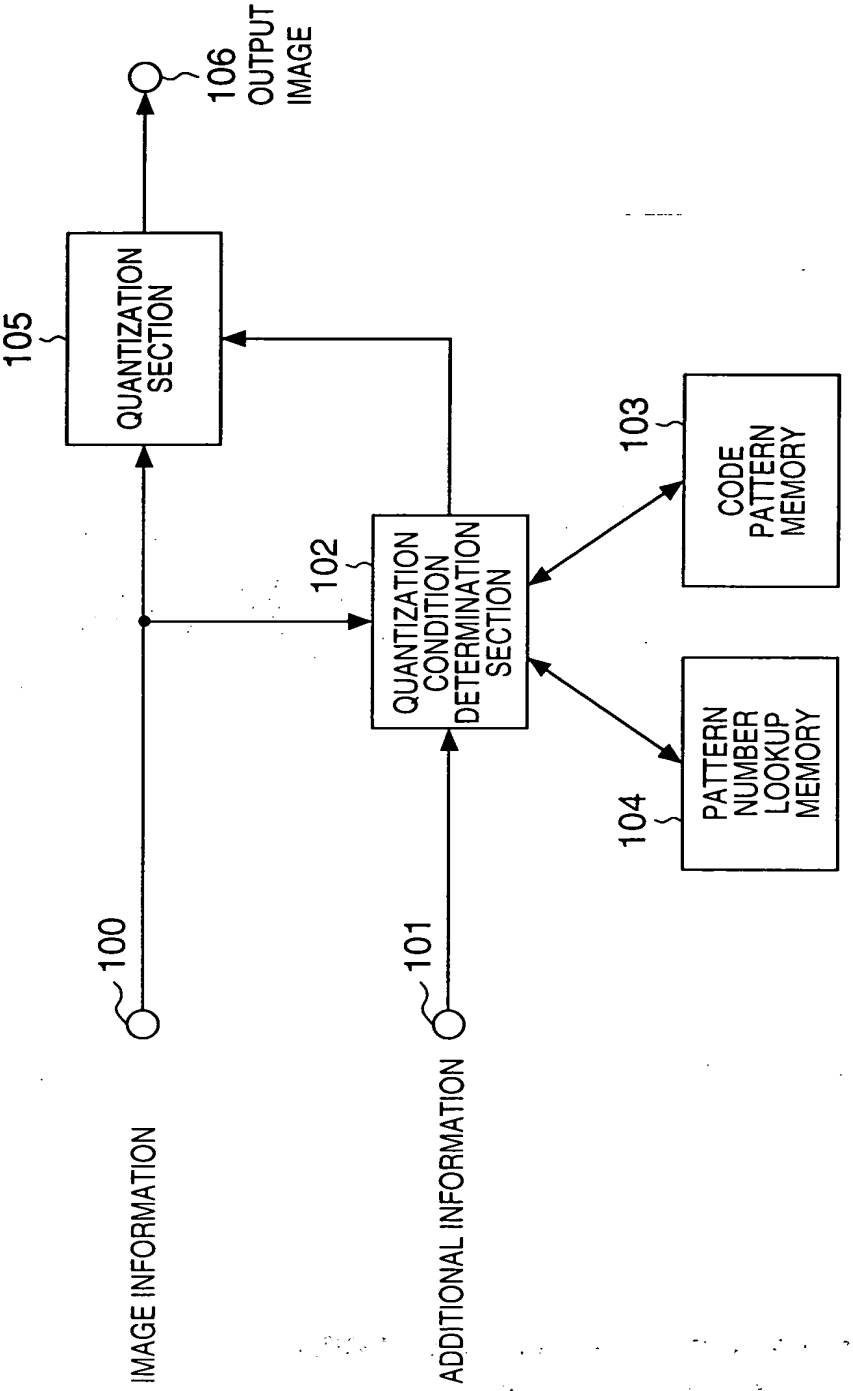

106
OUTPUT
IMAGE
105
QUANTIZATION
SECTION
102
QUANTIZATION
CONDITION
DETERMINATION
SECTION
103
CODE
PATTERN
MEMORY
104
PATTERN
NUMBER
LOOKUP
MEMORY
100
IMAGE INFORMATION
101
ADDITIONAL INFORMATION

FIG. 23A

FIG. 23B

FIG. 23C

FIG. 23D

FIG. 24A

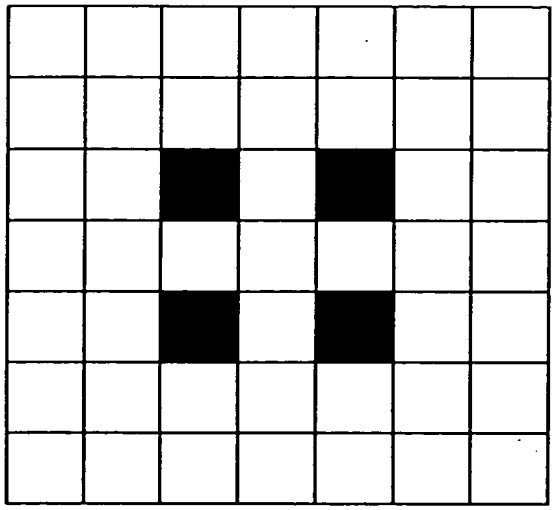


FIG. 24B

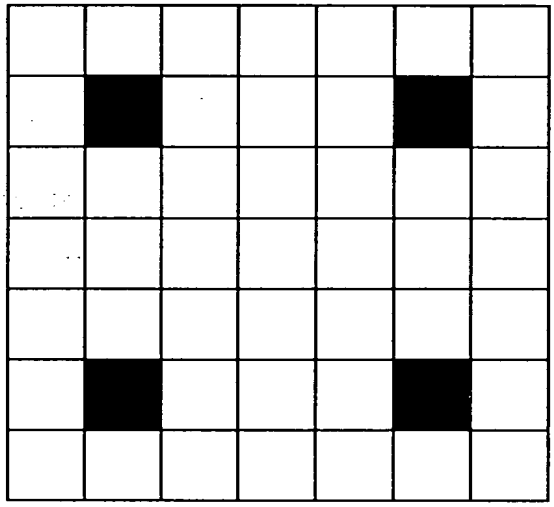


FIG. 24C

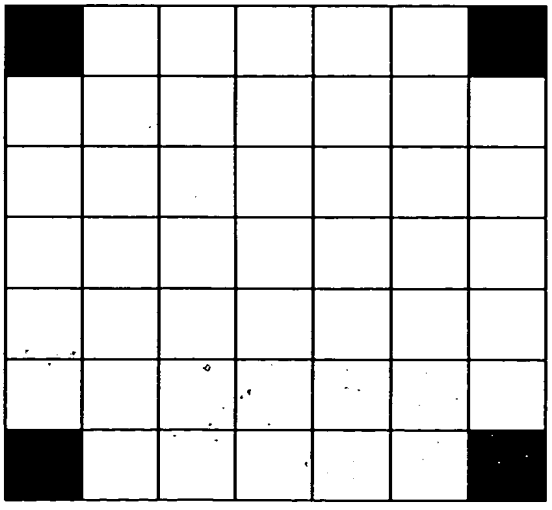


FIG. 25

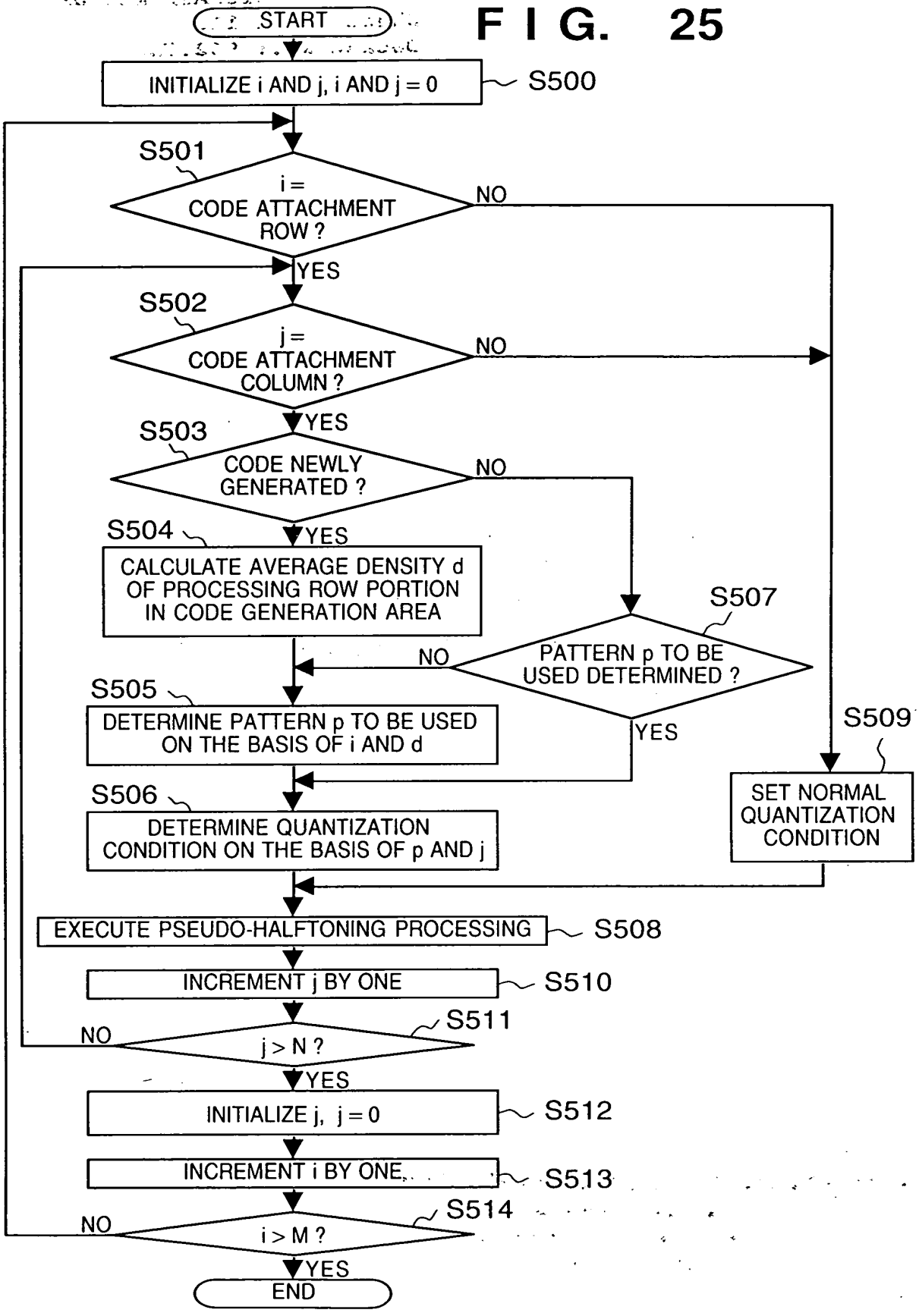

START
INITIALIZE i AND j, i AND j = 0
S500
S501
i = CODE ATTACHMENT ROW ?
NO
YES
S502
j = CODE ATTACHMENT COLUMN ?
NO
YES
S503
CODE NEWLY GENERATED ?
NO
YES
S504
CALCULATE AVERAGE DENSITY d OF PROCESSING ROW PORTION IN CODE GENERATION AREA
S507
PATTERN p TO BE USED DETERMINED ?
NO
YES
S505
DETERMINE PATTERN p TO BE USED ON THE BASIS OF i AND d
S509
SET NORMAL QUANTIZATION CONDITION
S506
DETERMINE QUANTIZATION CONDITION ON THE BASIS OF p AND j
EXECUTE PSEUDO-HALFTONING PROCESSING
S508
INCREMENT j BY ONE
S510
S511
NO
j > N ?
YES
INITIALIZE j, j = 0
S512
INCREMENT i BY ONE
S513
S514
NO
i > M ?
YES
END

FIG. 26A

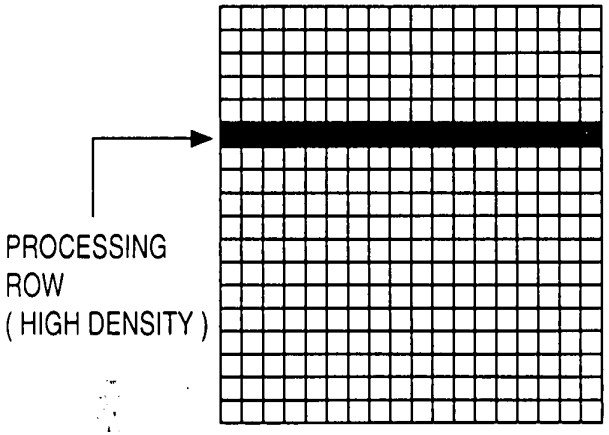


FIG. 26B

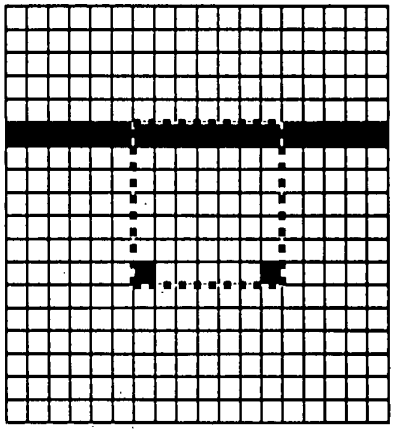


FIG. 26C

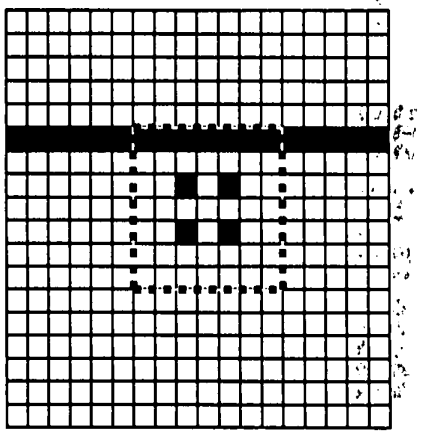


FIG. 26D

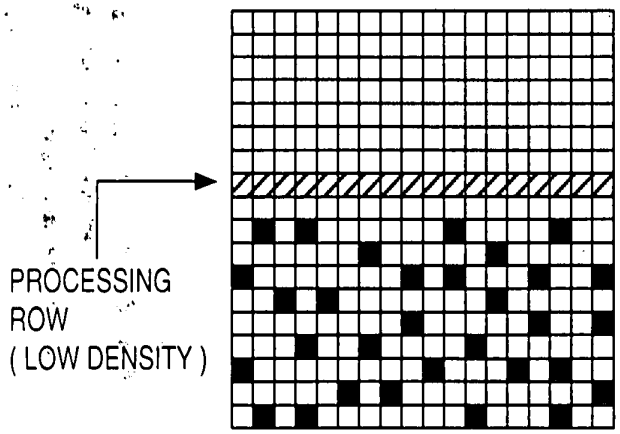


FIG. 26E

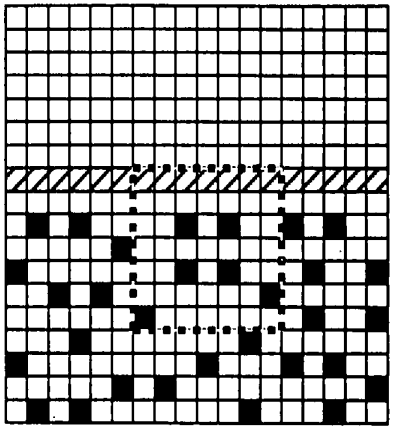


FIG. 26F

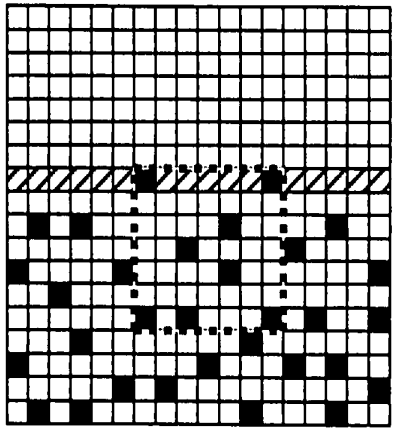


FIG. 27

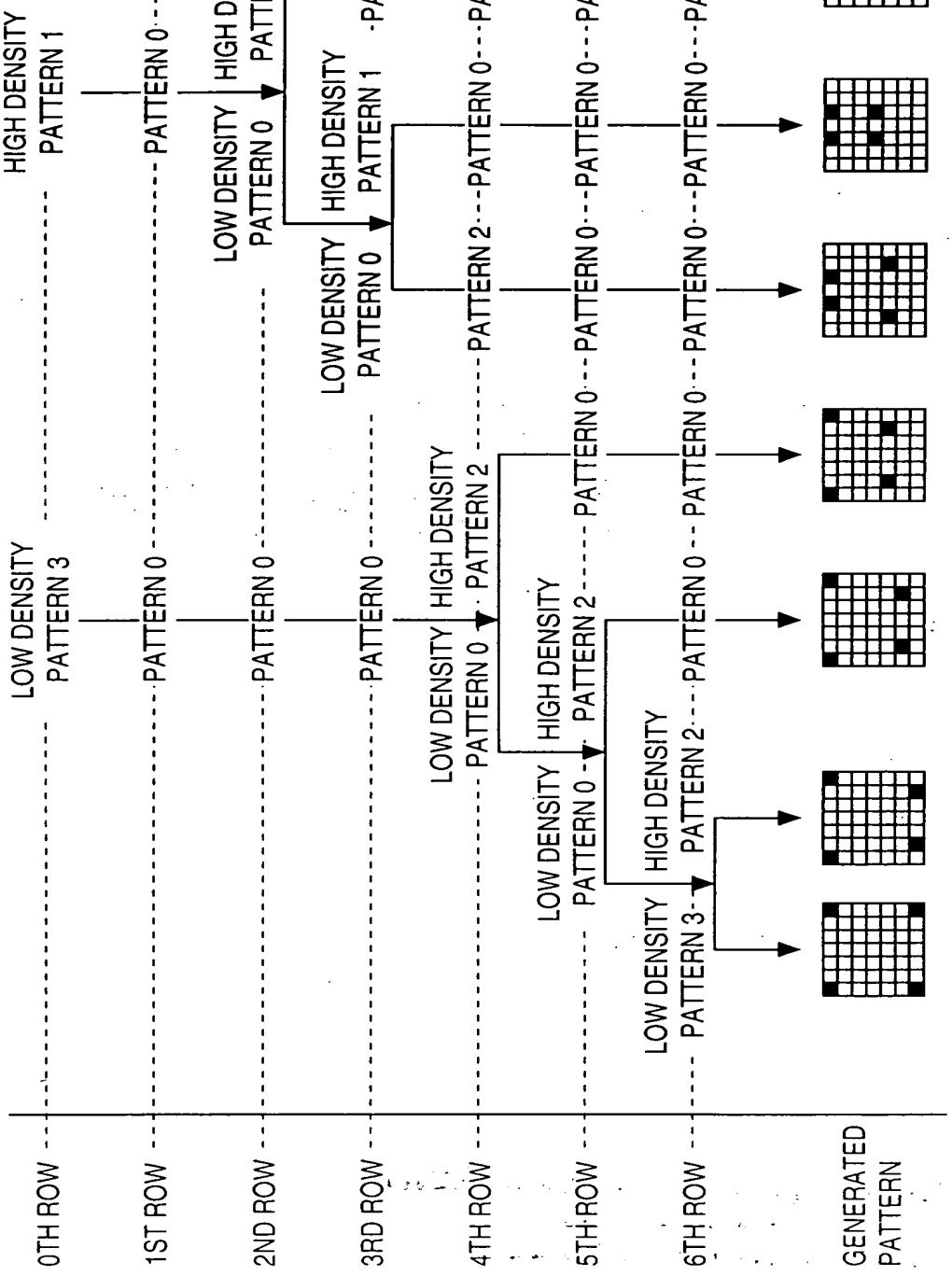


FIG. 28

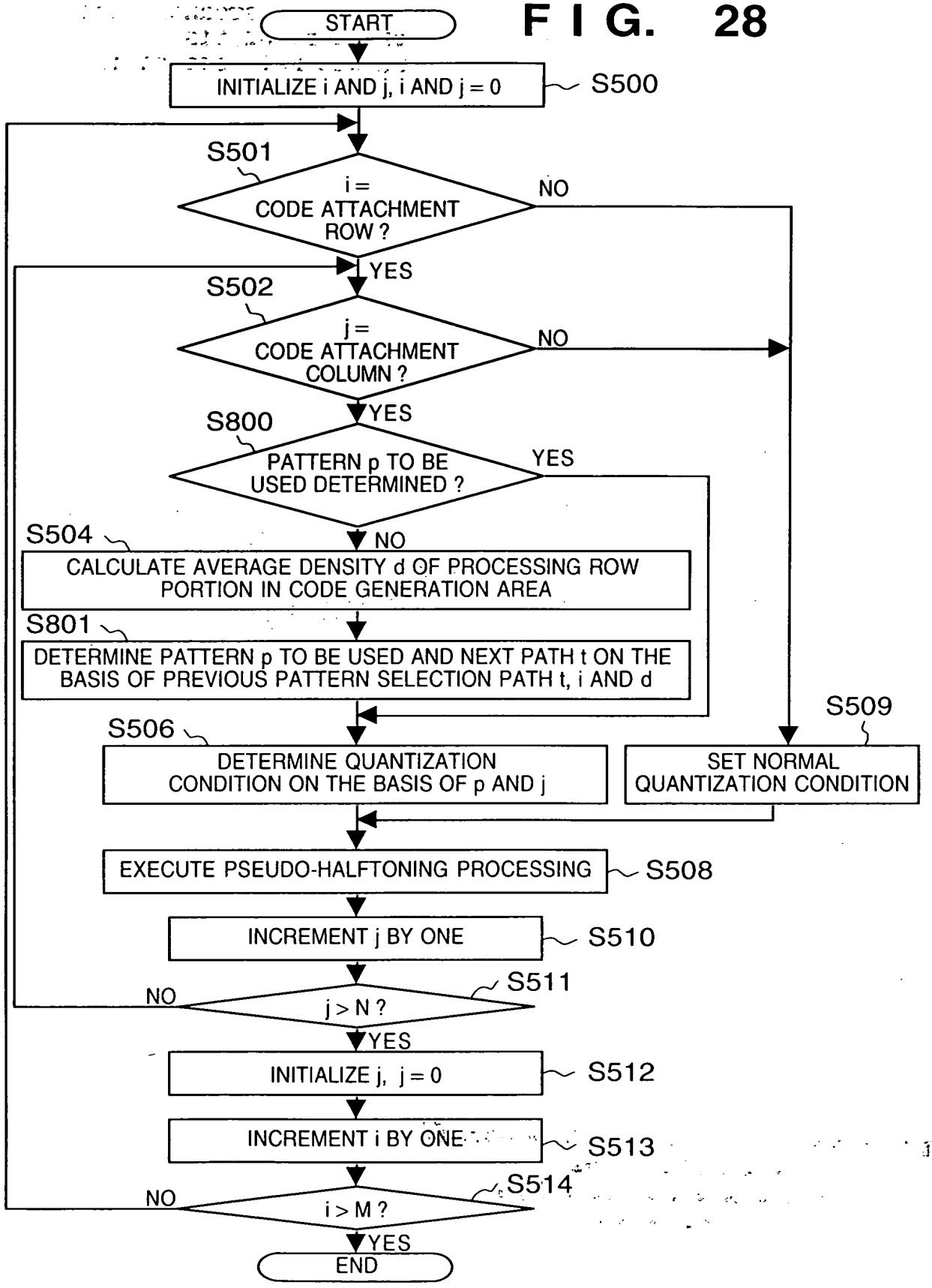

START
INITIALIZE i AND j, i AND j = 0
S500
S501
i = CODE ATTACHMENT ROW ?
NO
YES
S502
j = CODE ATTACHMENT COLUMN ?
NO
YES
S800
PATTERN p TO BE USED DETERMINED ?
YES
NO
S504
CALCULATE AVERAGE DENSITY d OF PROCESSING ROW PORTION IN CODE GENERATION AREA
S801
DETERMINE PATTERN p TO BE USED AND NEXT PATH t ON THE BASIS OF PREVIOUS PATTERN SELECTION PATH t, i AND d
S506
DETERMINE QUANTIZATION CONDITION ON THE BASIS OF p AND j
S509
SET NORMAL QUANTIZATION CONDITION
EXECUTE PSEUDO-HALFTONING PROCESSING
S508
INCREMENT j BY ONE
S510
S511
NO
j > N ?
YES
INITIALIZE j, j = 0
S512
INCREMENT i BY ONE
S513
S514
NO
i > M ?
YES
END

FIG. 29

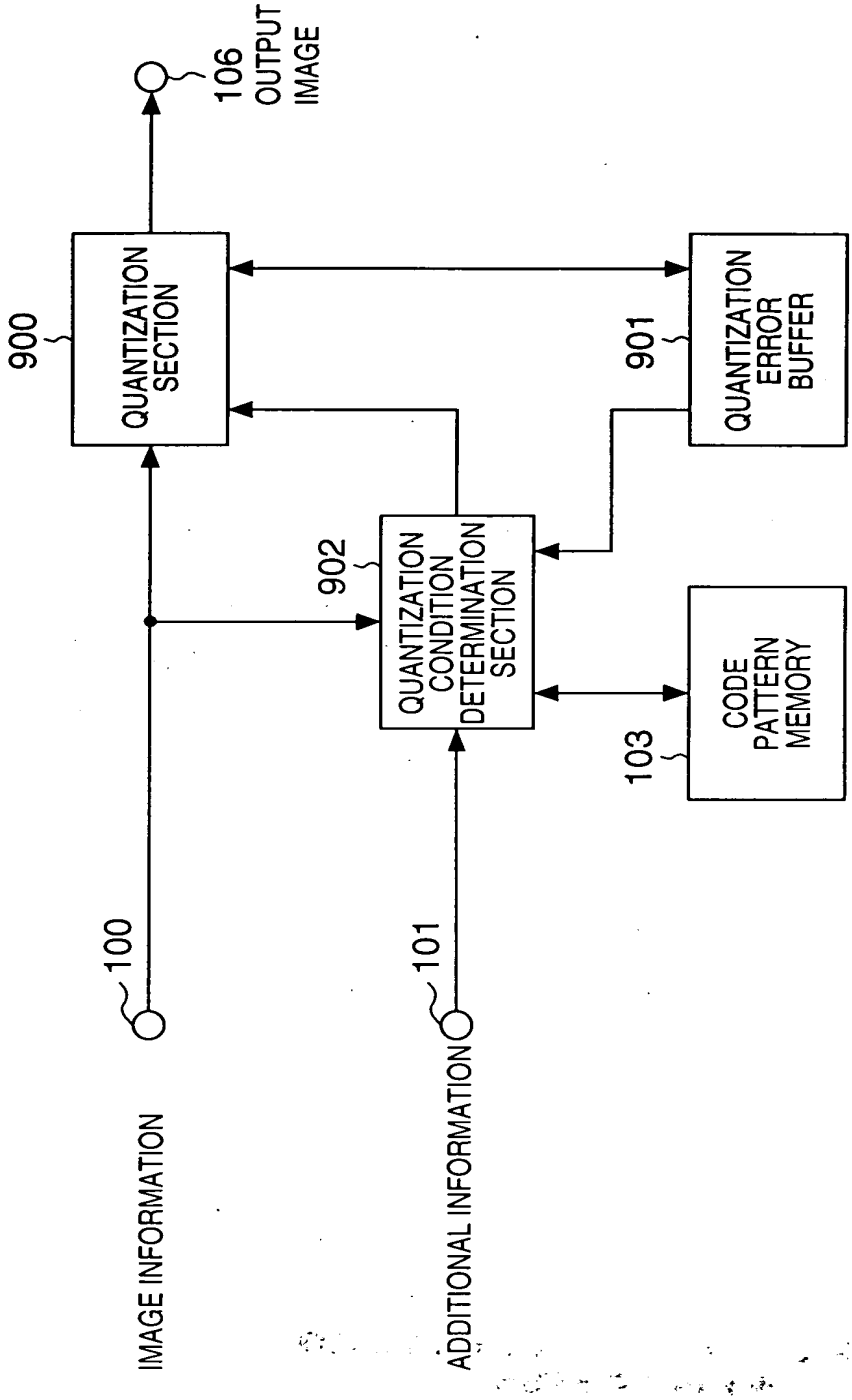


FIG. 30A

LOW-DENSITY REGION

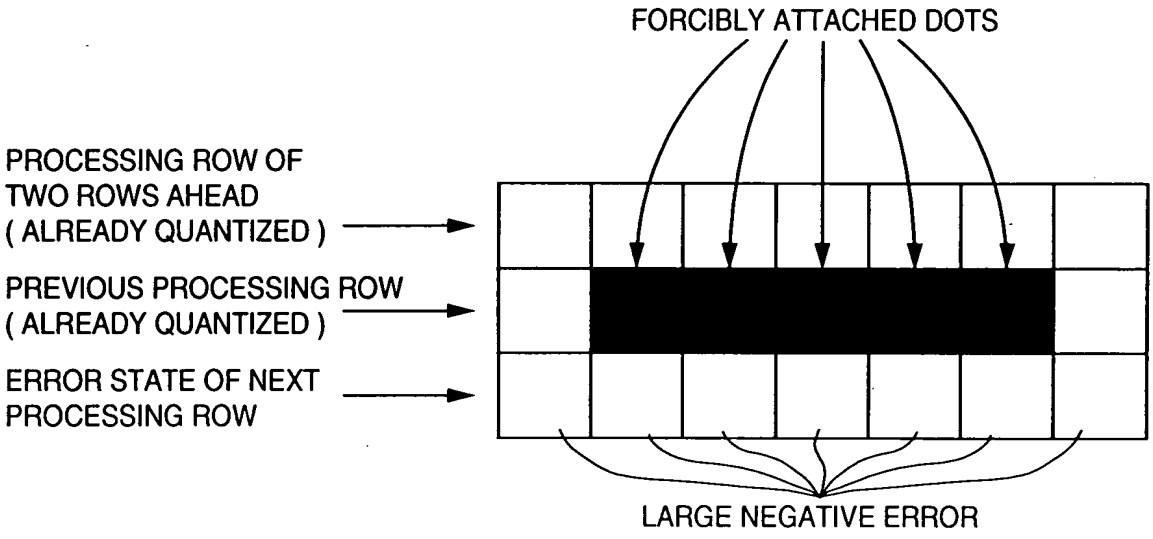


FIG. 30B

INTERMEDIATE-DENSITY REGION

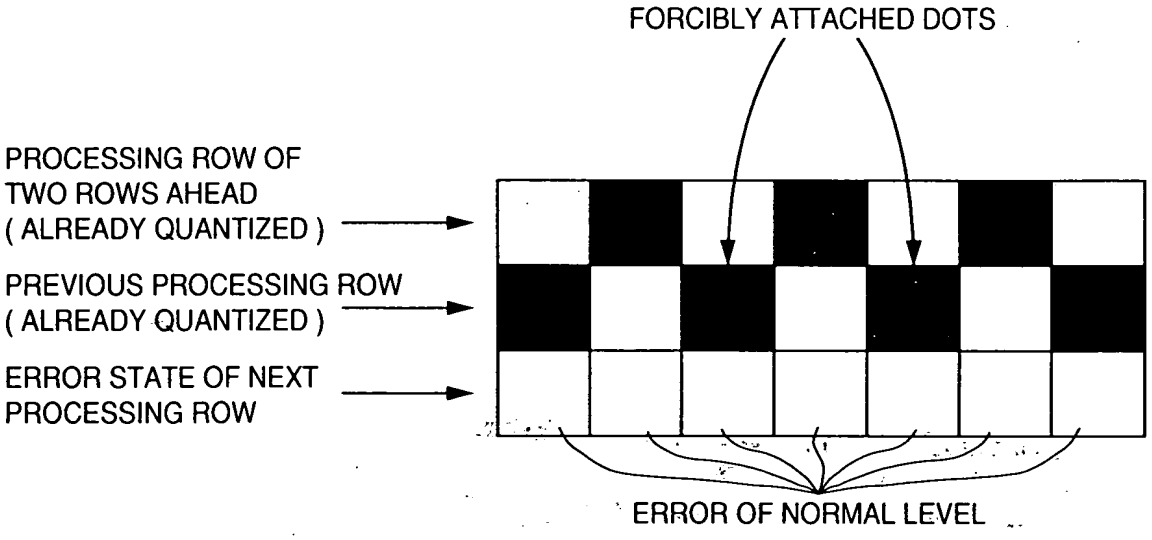


FIG. 31

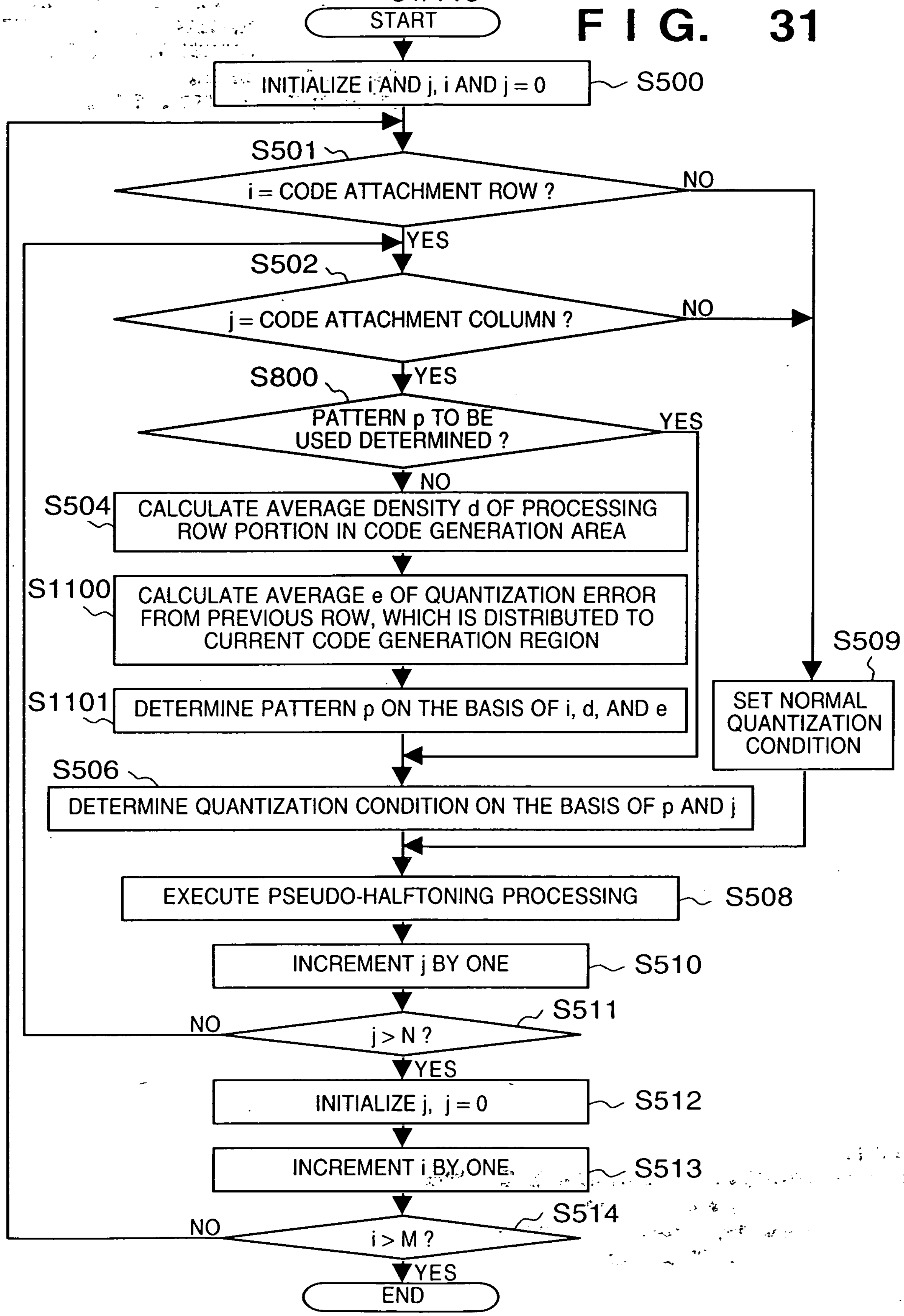


FIG. 32

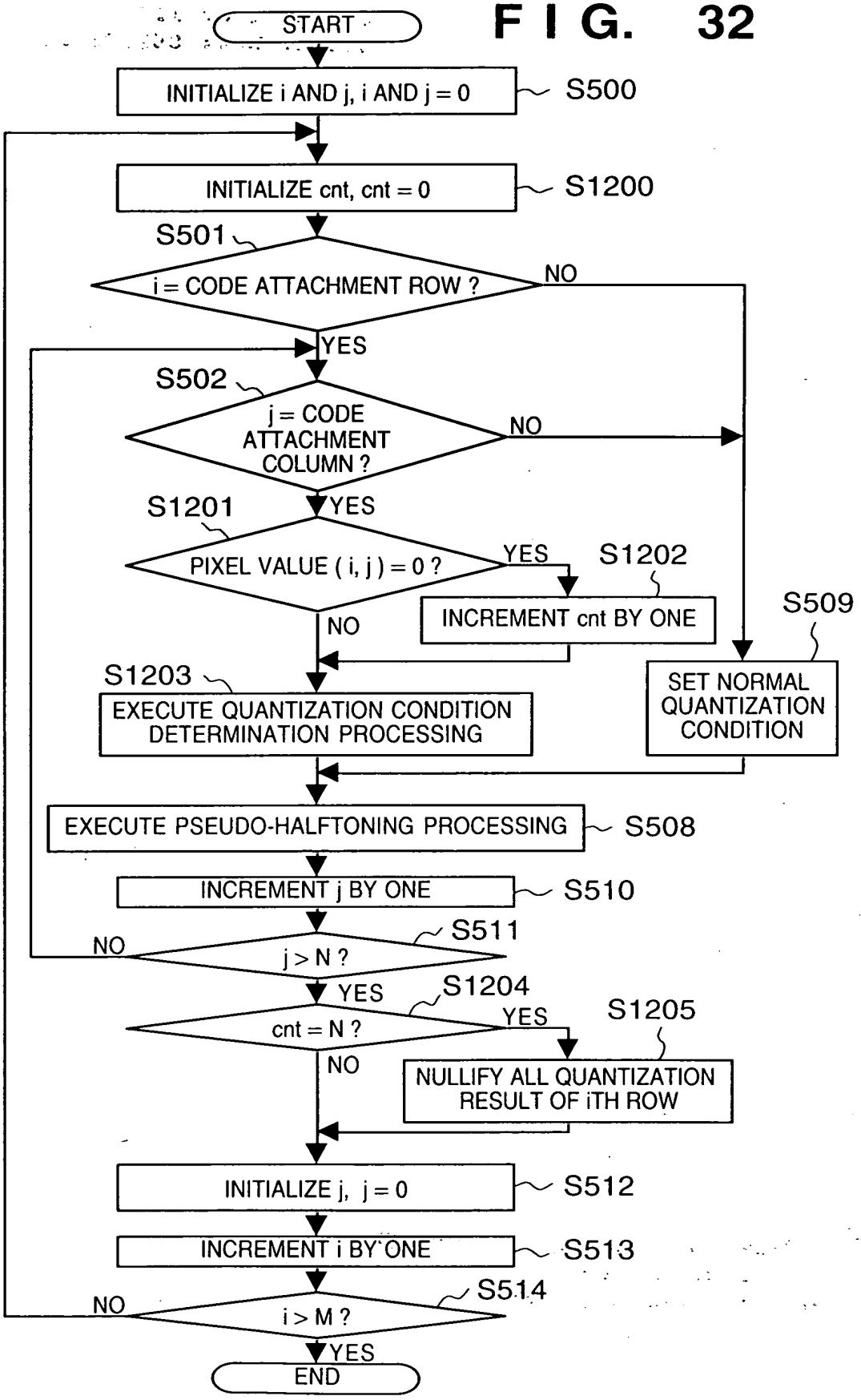

START
INITIALIZE i AND j, i AND j = 0
S500
INITIALIZE cnt, cnt = 0
S1200
S501
i = CODE ATTACHMENT ROW ?
NO
YES
S502
j = CODE ATTACHMENT COLUMN ?
NO
YES
S1201
PIXEL VALUE (i, j) = 0 ?
YES
S1202
INCREMENT cnt BY ONE
NO
S1203
EXECUTE QUANTIZATION CONDITION DETERMINATION PROCESSING
S509
SET NORMAL QUANTIZATION CONDITION
EXECUTE PSEUDO-HALFTONING PROCESSING
S508
INCREMENT j BY ONE
S510
S511
NO
j > N ?
YES
S1204
cnt = N ?
YES
S1205
NO
NULLIFY ALL QUANTIZATION RESULT OF iTH ROW
INITIALIZE j, j = 0
S512
INCREMENT i BY ONE
S513
S514
NO
i > M ?
YES
END

FIG. 33

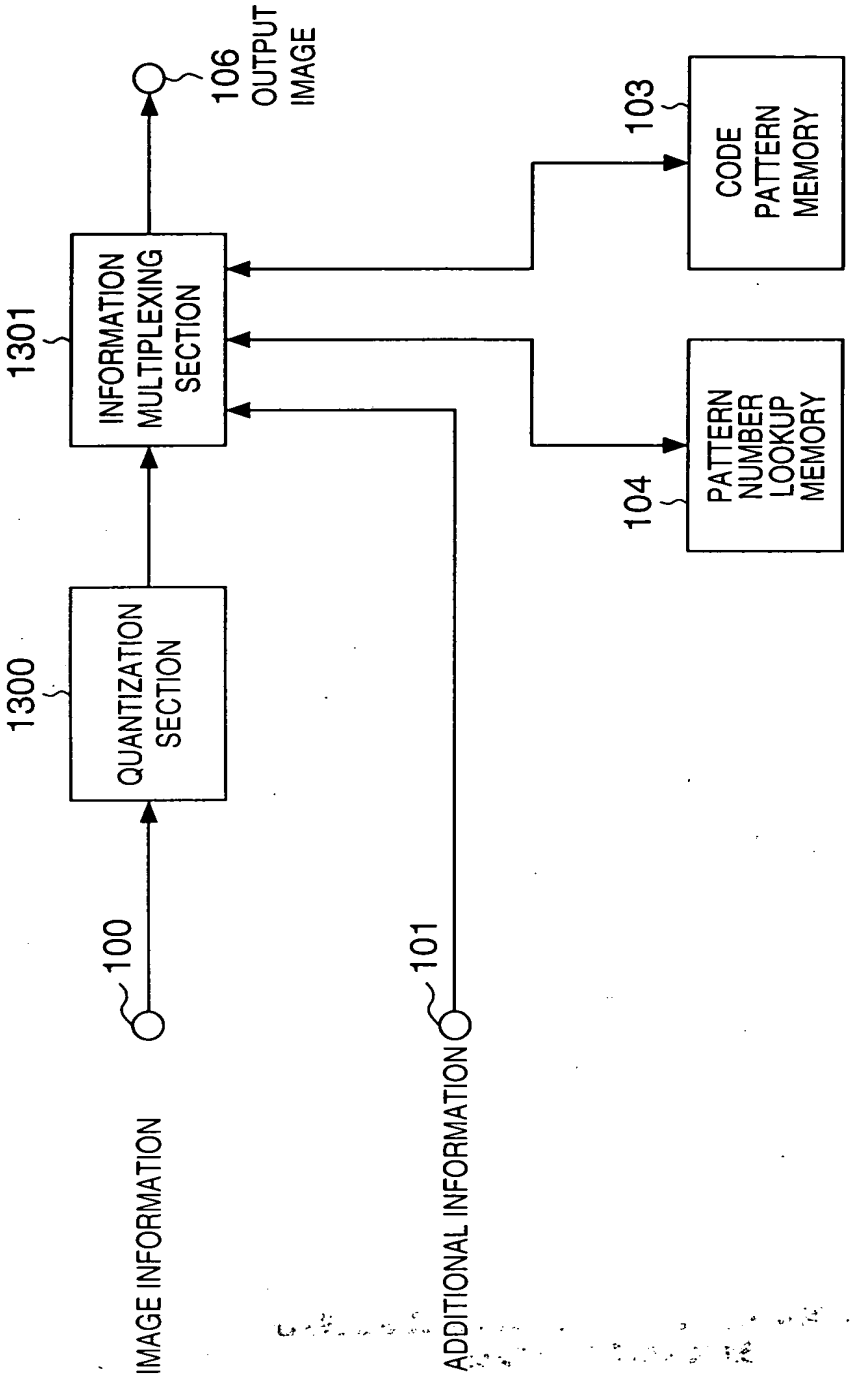
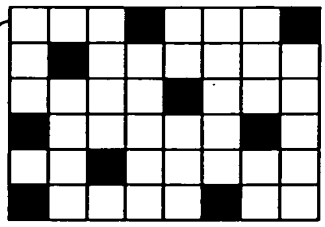
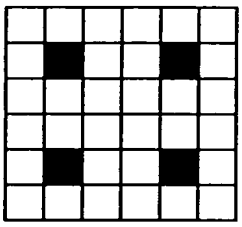


FIG. 34A



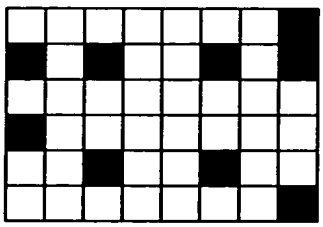
INPUT IMAGE

FIG. 34B



ADDITIONAL PATTERN

FIG. 34C



OUTPUT IMAGE

FIG. 34D

0 0 0 1 0 0 0 1

CODE GENERATION REGION START ROW PATTERN

FIG. 34E

PATTERN IDENTIFICATION NUMBER

PATTERN : 0 0 0 1 0 0 0 1	
OUTPUT PATTERN LOOKUP	ROW NUMBER 0
	ROW NUMBER 1
	ROW NUMBER 2
	ROW NUMBER 3
	ROW NUMBER 4
	ROW NUMBER 5

FIG. 34F

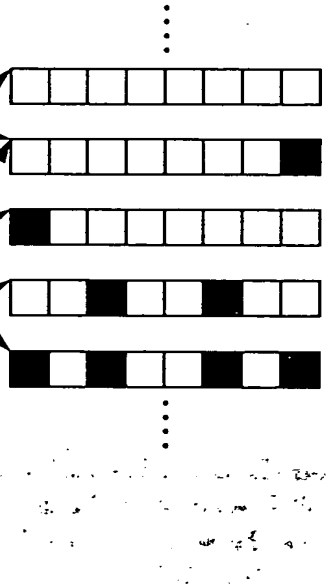


FIG. 35

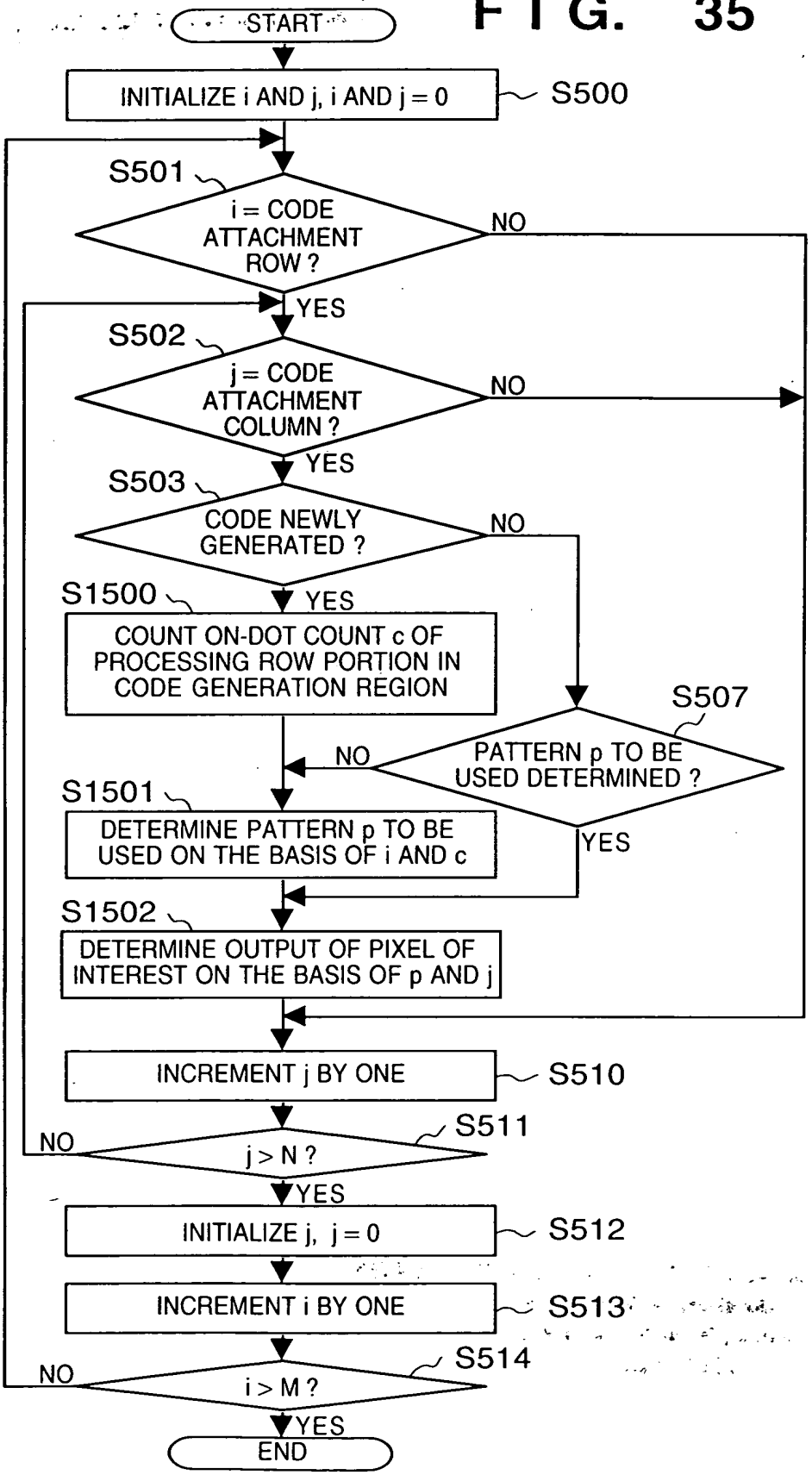


FIG. 36

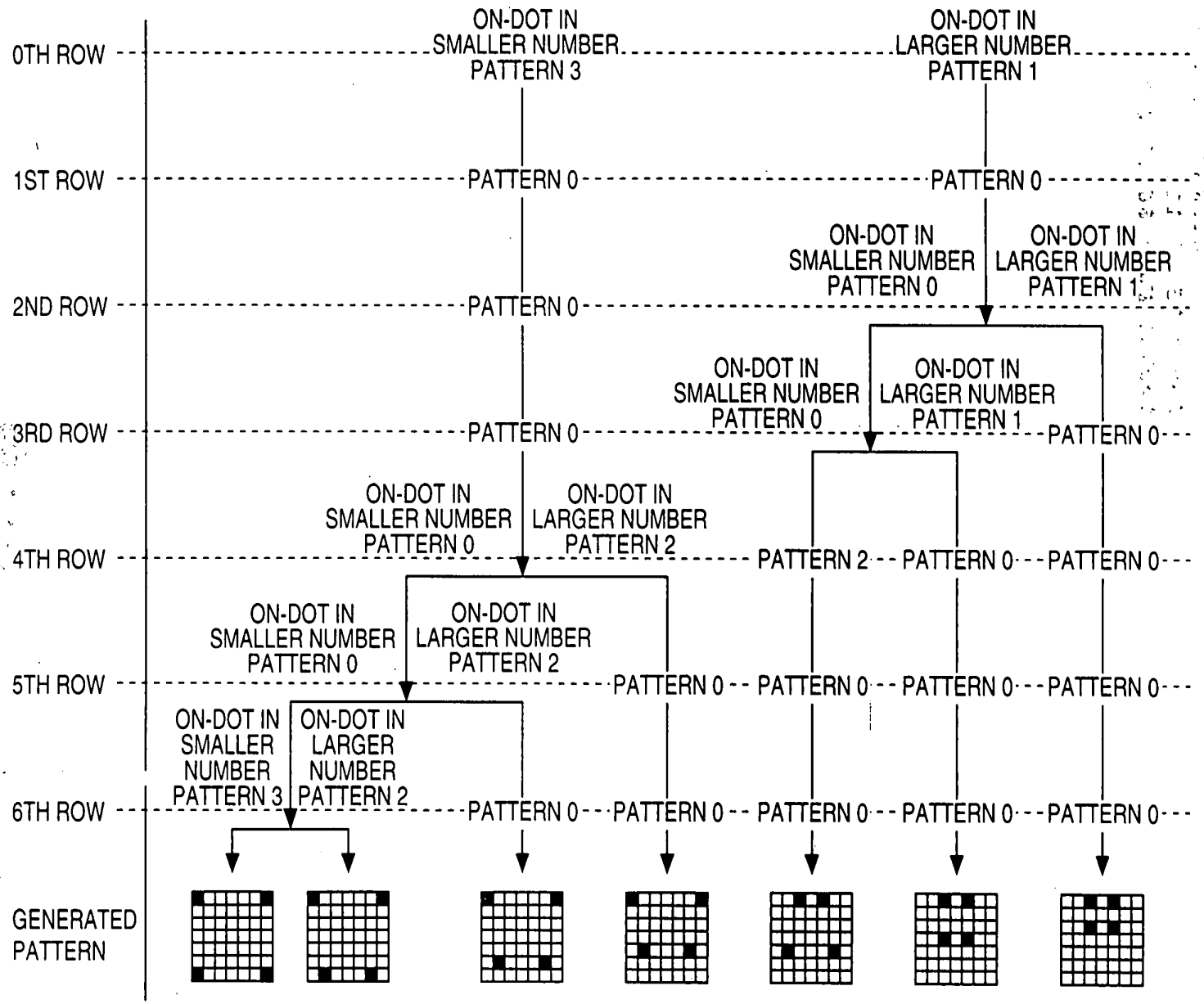

0TH ROW
1ST ROW
2ND ROW
3RD ROW
4TH ROW
5TH ROW
6TH ROW
GENERATED PATTERN
ON-DOT IN SMALLER NUMBER PATTERN 3
ON-DOT IN LARGER NUMBER PATTERN 1
PATTERN 0
ON-DOT IN SMALLER NUMBER PATTERN 0
ON-DOT IN LARGER NUMBER PATTERN 1
ON-DOT IN SMALLER NUMBER PATTERN 0
ON-DOT IN LARGER NUMBER PATTERN 2
ON-DOT IN SMALLER NUMBER PATTERN 0
ON-DOT IN LARGER NUMBER PATTERN 2
ON-DOT IN SMALLER NUMBER PATTERN 3
ON-DOT IN LARGER NUMBER PATTERN 2

FIG. 37

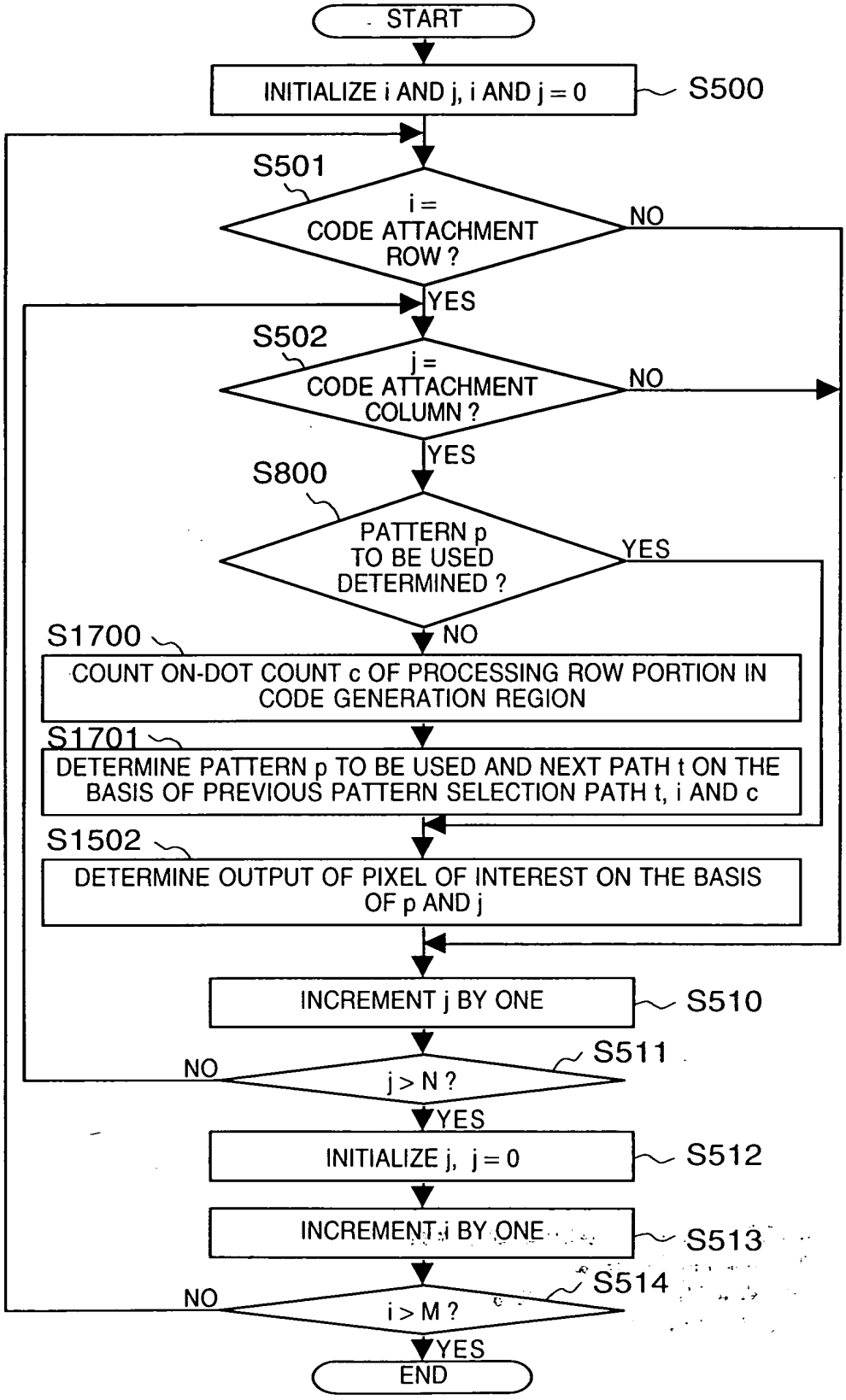

START
INITIALIZE i AND j, i AND j = 0
S500
S501
i = CODE ATTACHMENT ROW ?
NO
YES
S502
j = CODE ATTACHMENT COLUMN ?
NO
YES
S800
PATTERN p TO BE USED DETERMINED ?
YES
NO
S1700
COUNT ON-DOT COUNT c OF PROCESSING ROW PORTION IN CODE GENERATION REGION
S1701
DETERMINE PATTERN p TO BE USED AND NEXT PATH t ON THE BASIS OF PREVIOUS PATTERN SELECTION PATH t, i AND c
S1502
DETERMINE OUTPUT OF PIXEL OF INTEREST ON THE BASIS OF p AND j
INCREMENT j BY ONE
S510
S511
NO
j > N ?
YES
INITIALIZE j, j = 0
S512
INCREMENT i BY ONE
S513
S514
NO
i > M ?
YES
END

FIG. 38

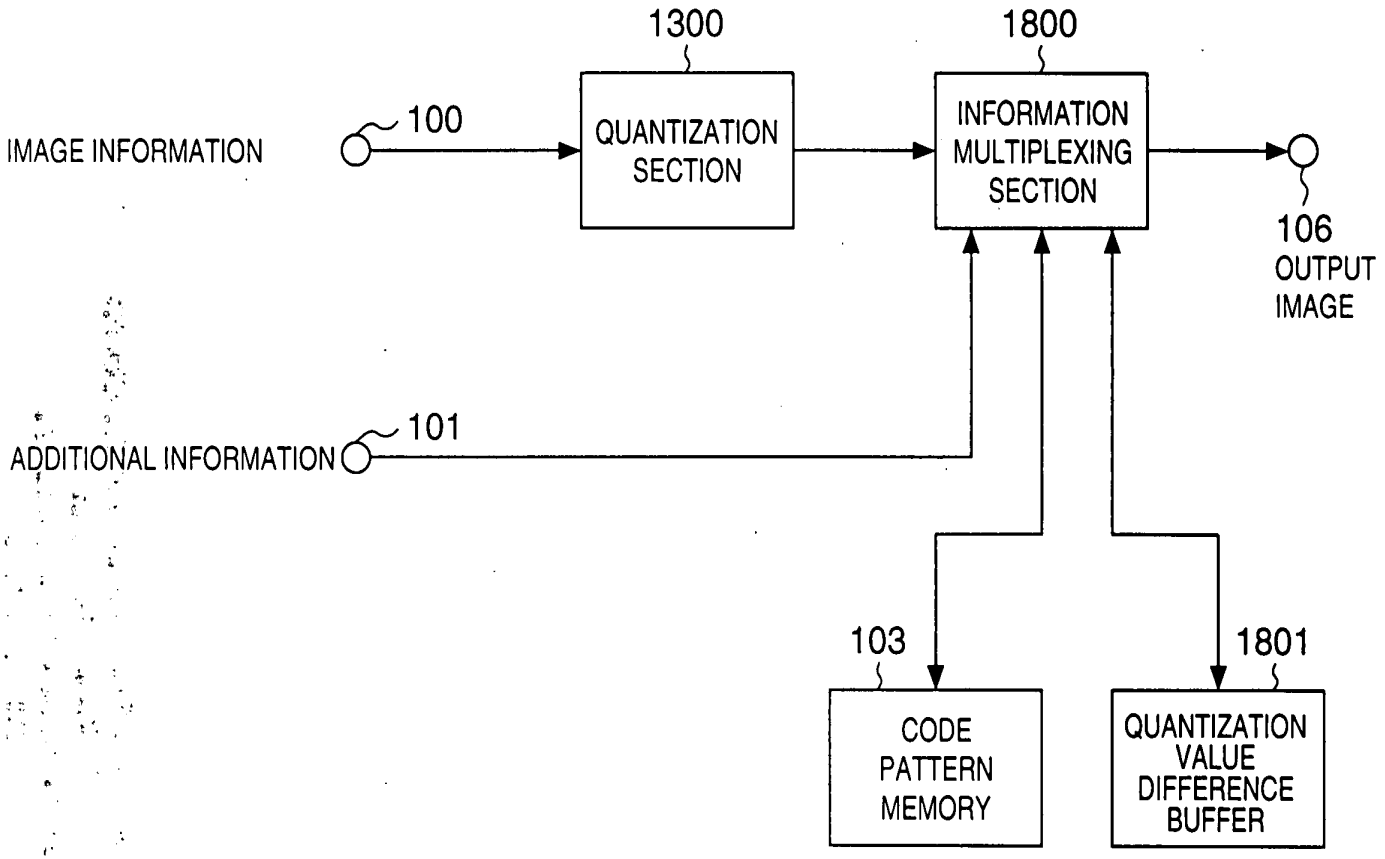


FIG. 39A

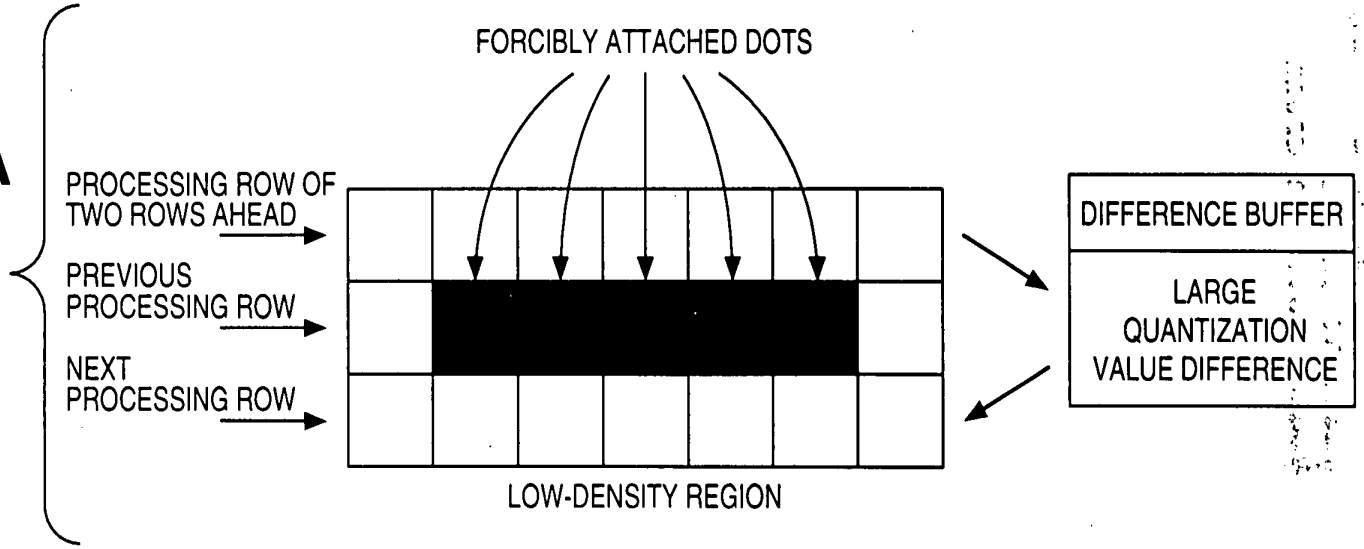
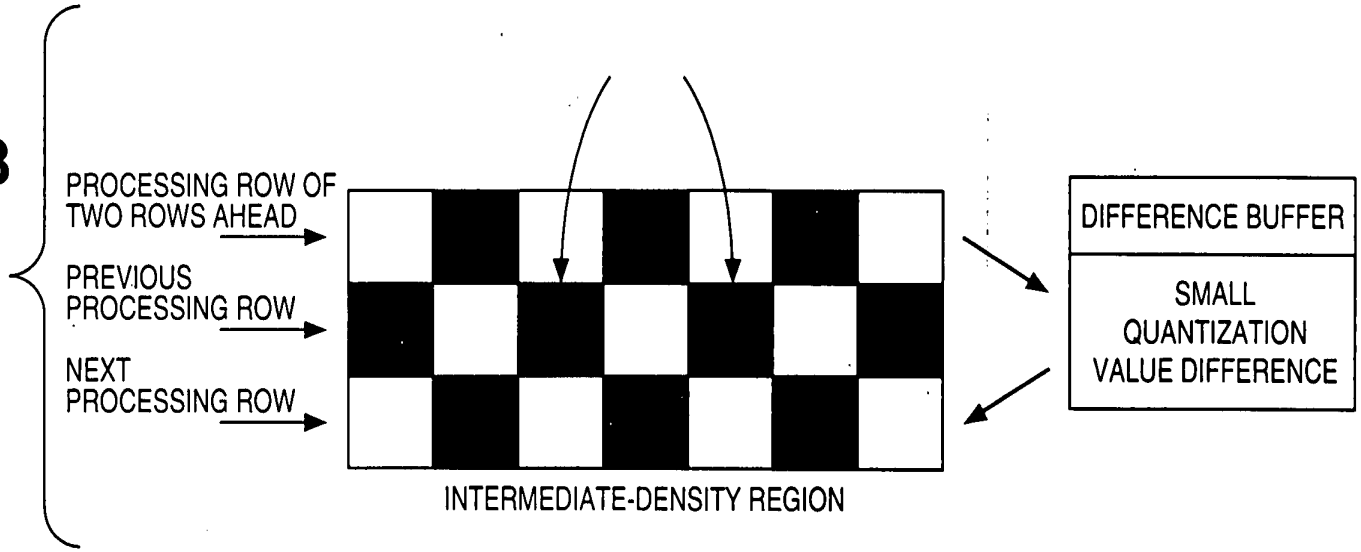
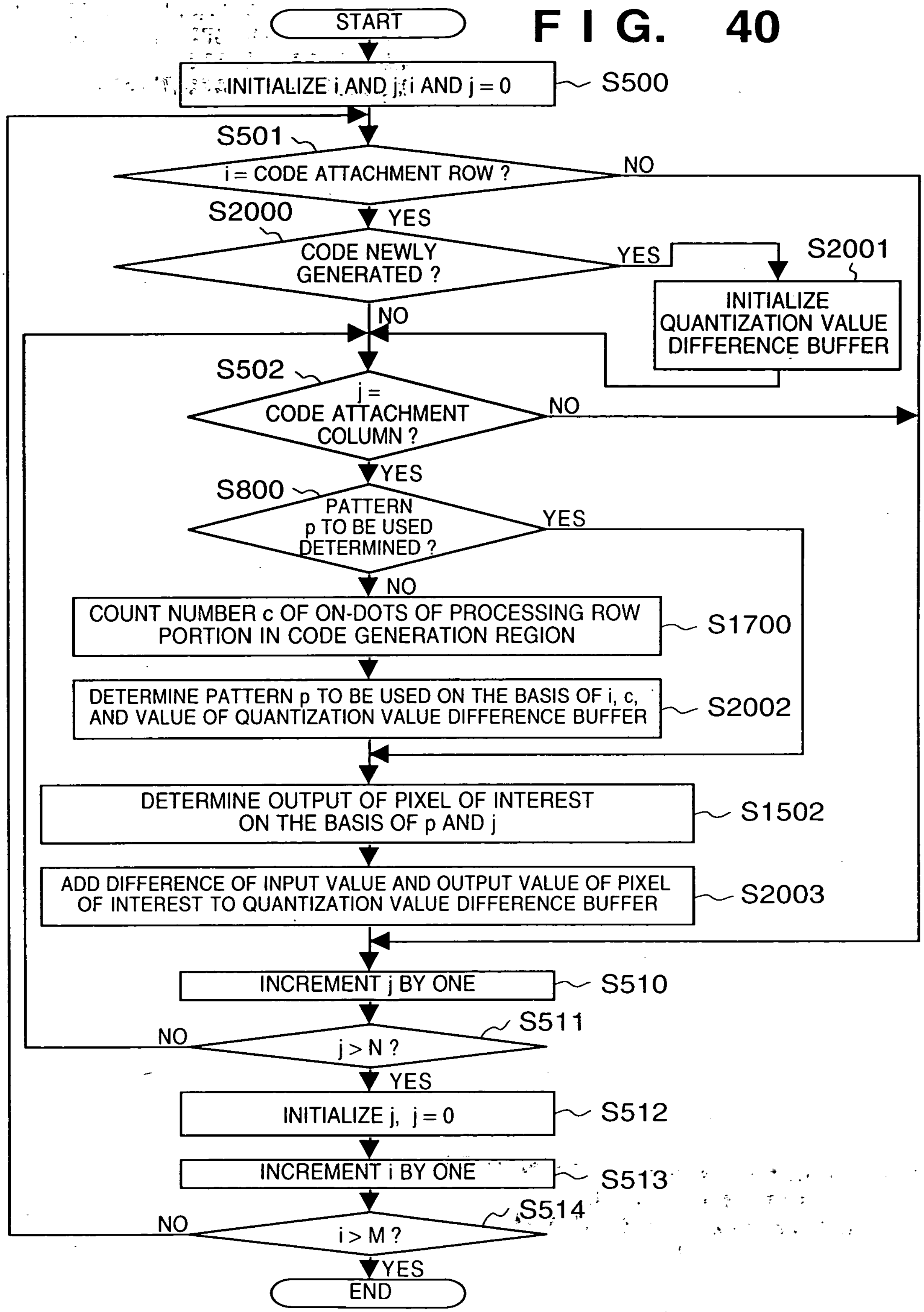


FIG. 39B




START
INITIALIZE i AND j, i AND j = 0
S500
S501
i = CODE ATTACHMENT ROW ?
NO
YES
S2000
CODE NEWLY GENERATED ?
YES
S2001
INITIALIZE QUANTIZATION VALUE DIFFERENCE BUFFER
NO
S502
j = CODE ATTACHMENT COLUMN ?
NO
YES
S800
PATTERN p TO BE USED DETERMINED ?
YES
NO
COUNT NUMBER c OF ON-DOTS OF PROCESSING ROW PORTION IN CODE GENERATION REGION
S1700
DETERMINE PATTERN p TO BE USED ON THE BASIS OF i, c, AND VALUE OF QUANTIZATION VALUE DIFFERENCE BUFFER
S2002
DETERMINE OUTPUT OF PIXEL OF INTEREST ON THE BASIS OF p AND j
S1502
ADD DIFFERENCE OF INPUT VALUE AND OUTPUT VALUE OF PIXEL OF INTEREST TO QUANTIZATION VALUE DIFFERENCE BUFFER
S2003
INCREMENT j BY ONE
S510
S511
NO
j > N ?
YES
INITIALIZE j, j = 0
S512
INCREMENT i BY ONE
S513
S514
NO
i > M ?
YES
END

F I G. 40

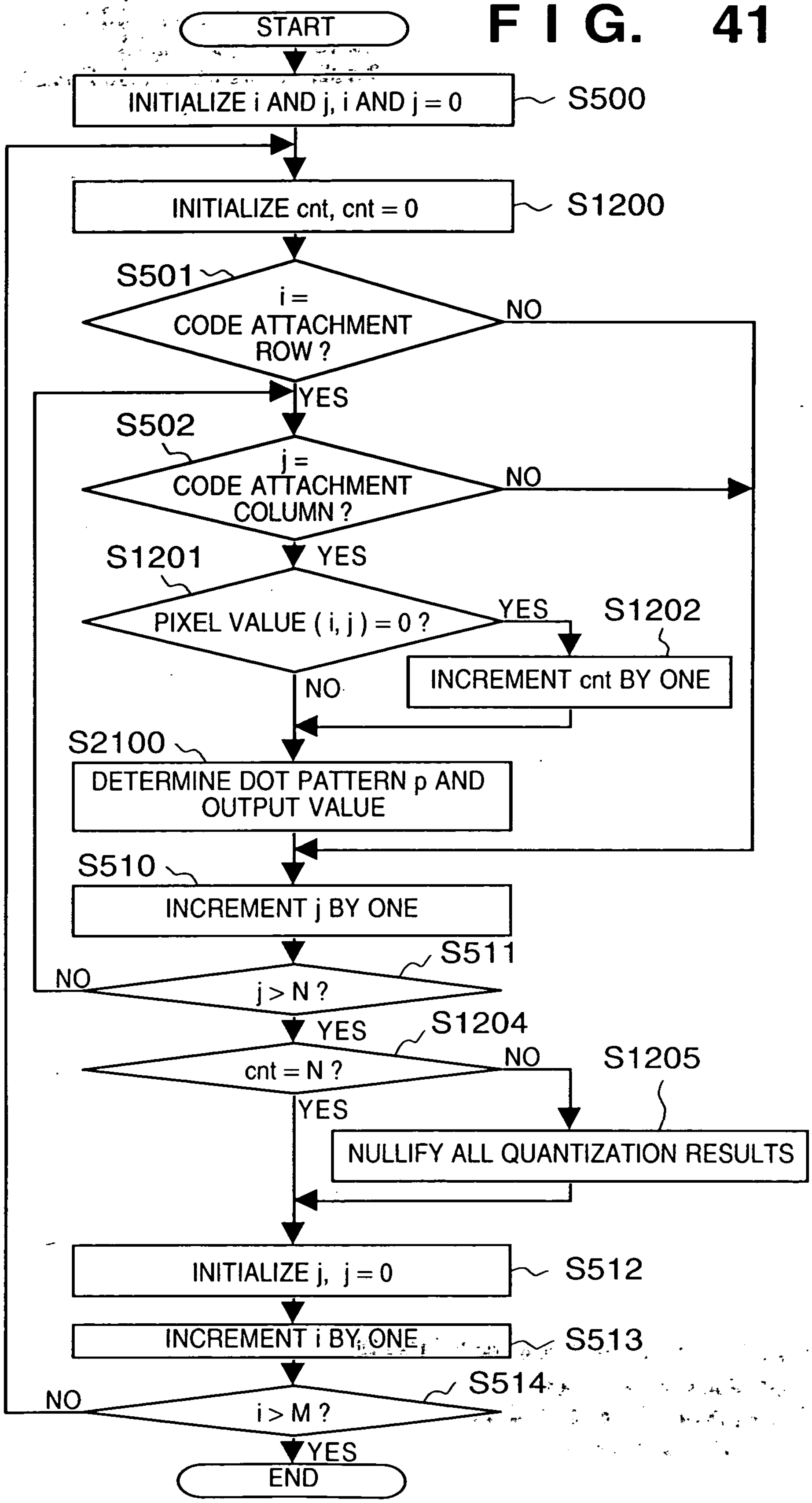


FIG. 41

FIG. 42

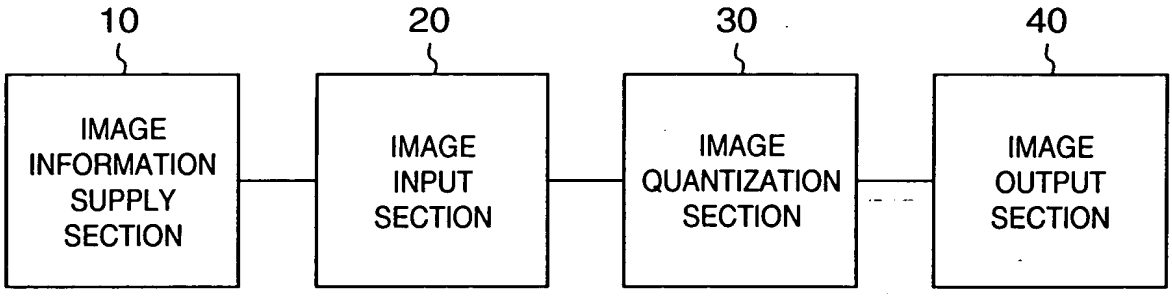


FIG. 43

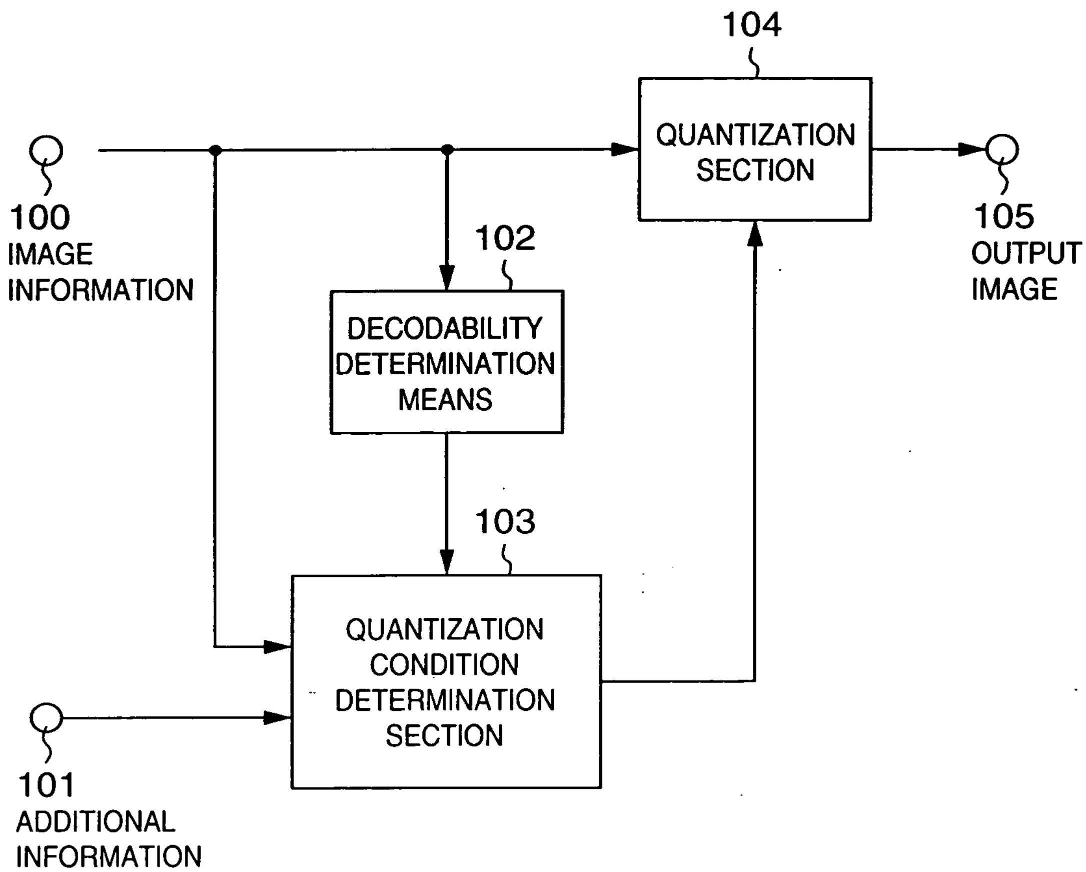


FIG. 44

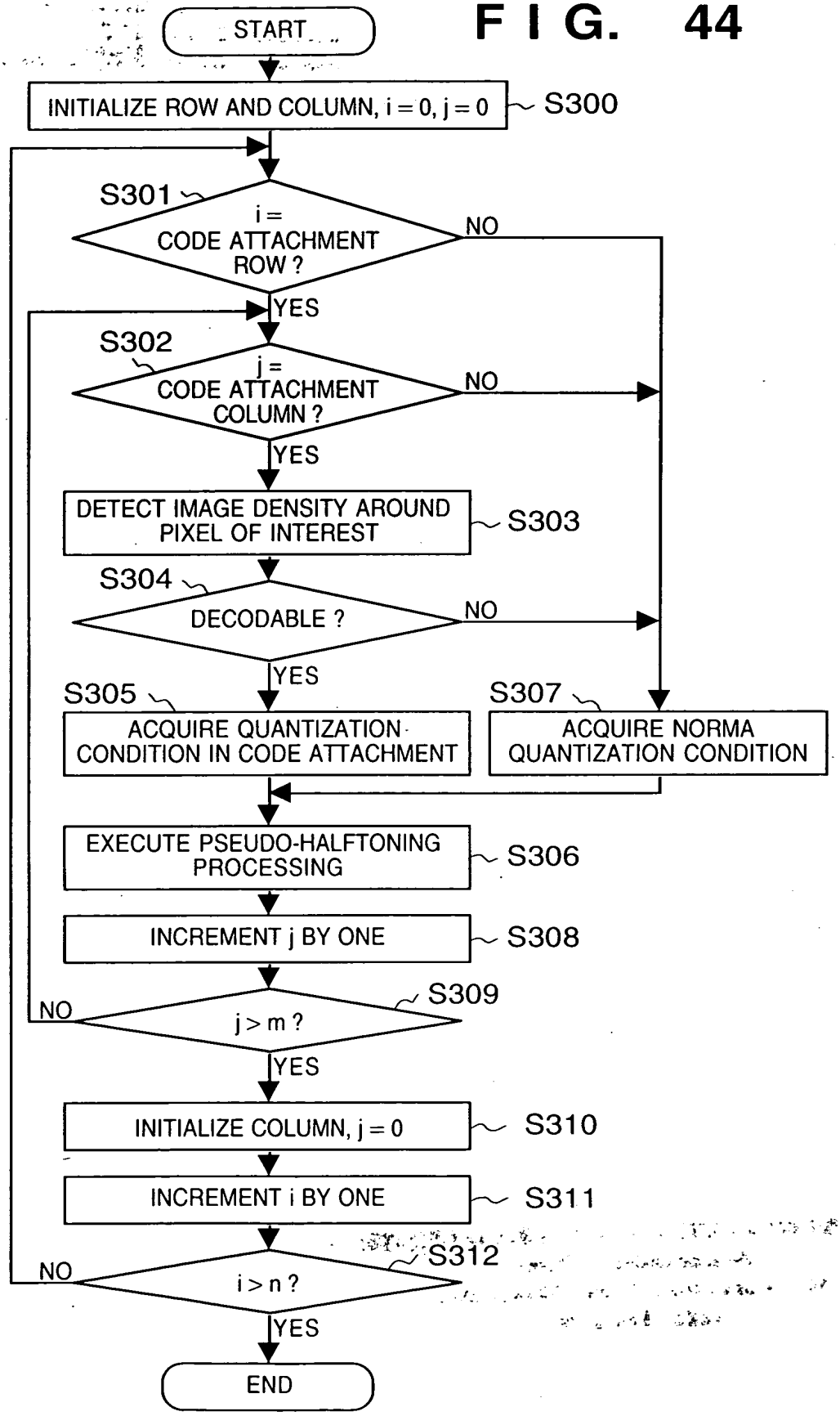
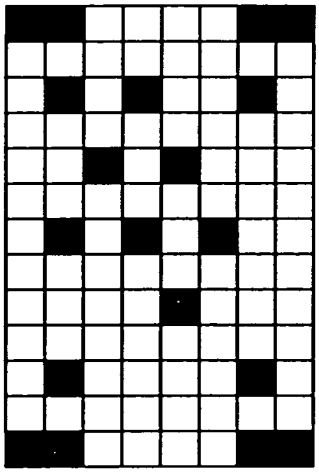

START
INITIALIZE ROW AND COLUMN, i = 0, j = 0
S300
S301
i = CODE ATTACHMENT ROW ?
NO
YES
S302
j = CODE ATTACHMENT COLUMN ?
NO
YES
DETECT IMAGE DENSITY AROUND PIXEL OF INTEREST
S303
S304
DECODABLE ?
NO
YES
S305
ACQUIRE QUANTIZATION CONDITION IN CODE ATTACHMENT
S307
ACQUIRE NORMA QUANTIZATION CONDITION
EXECUTE PSEUDO-HALFTONING PROCESSING
S306
INCREMENT j BY ONE
S308
S309
NO
j > m ?
YES
INITIALIZE COLUMN, j = 0
S310
INCREMENT i BY ONE
S311
S312
NO
i > n ?
YES
END

FIG. 45



■ : CODE

FIG. 46

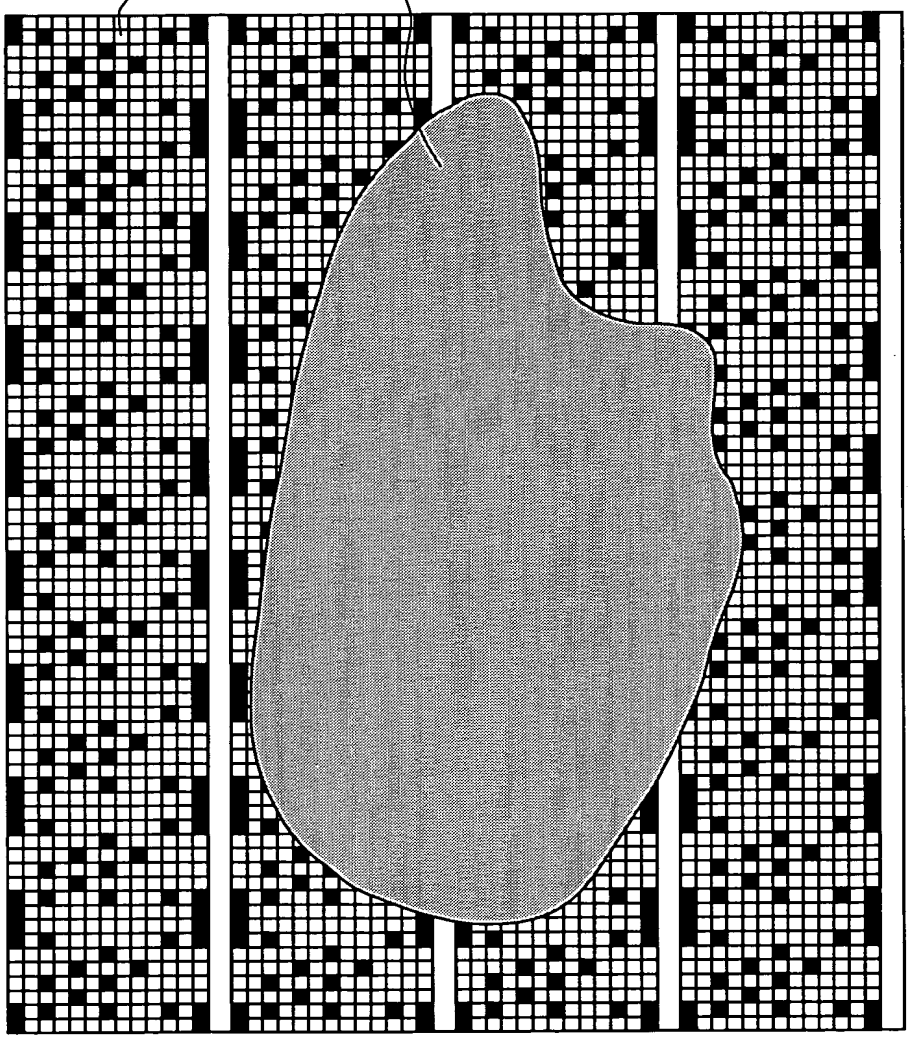


FIG. 47

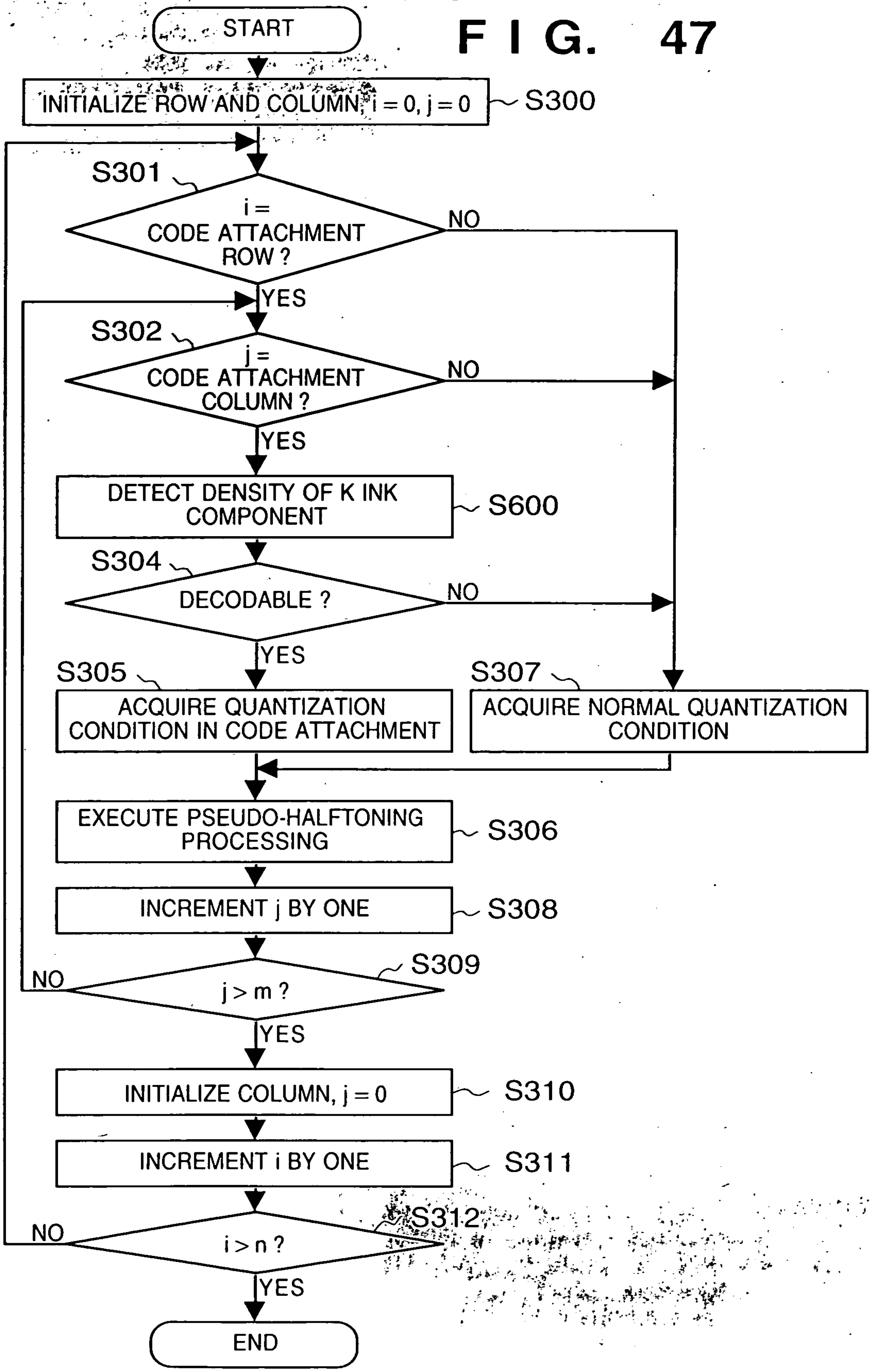
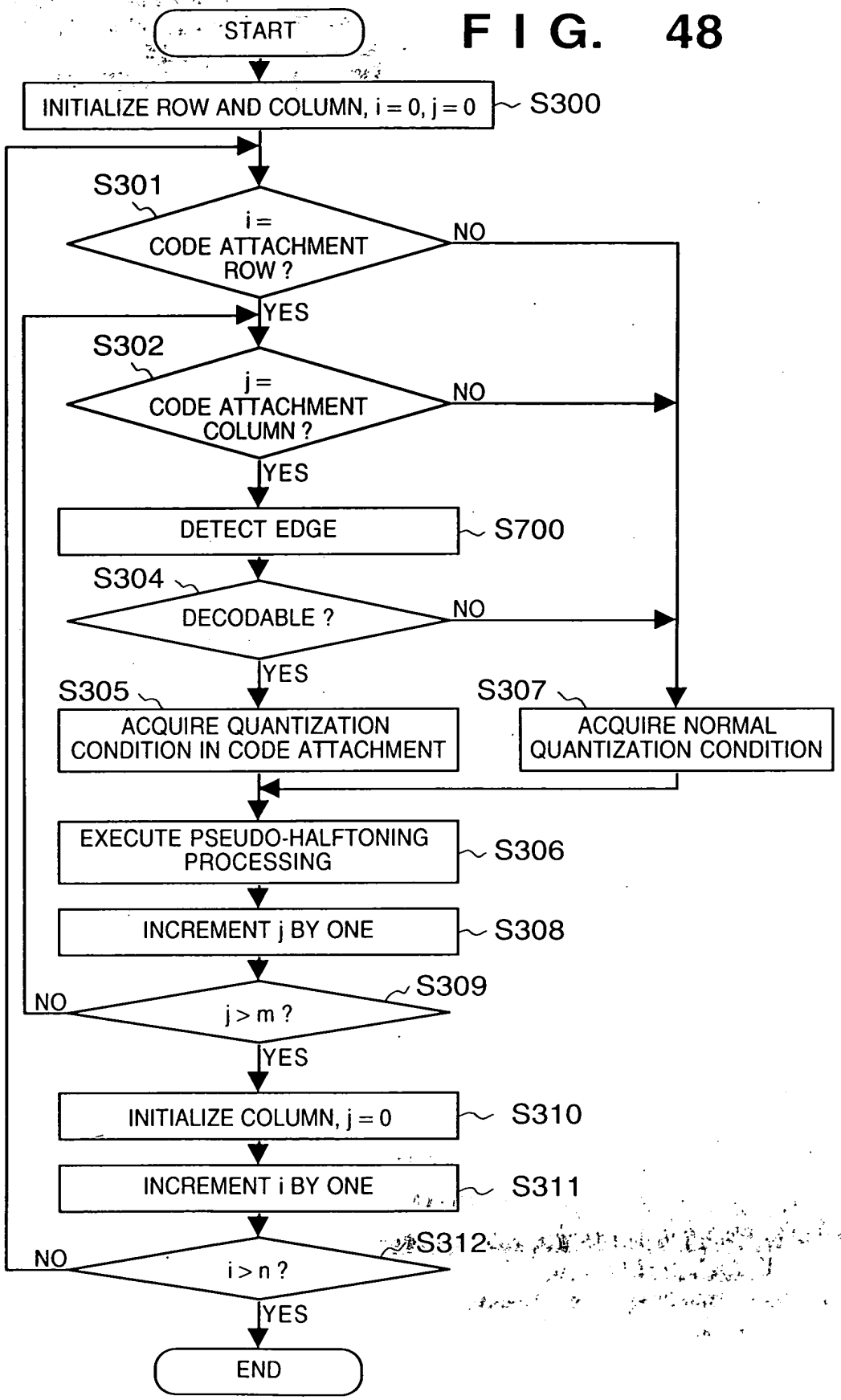


FIG. 48



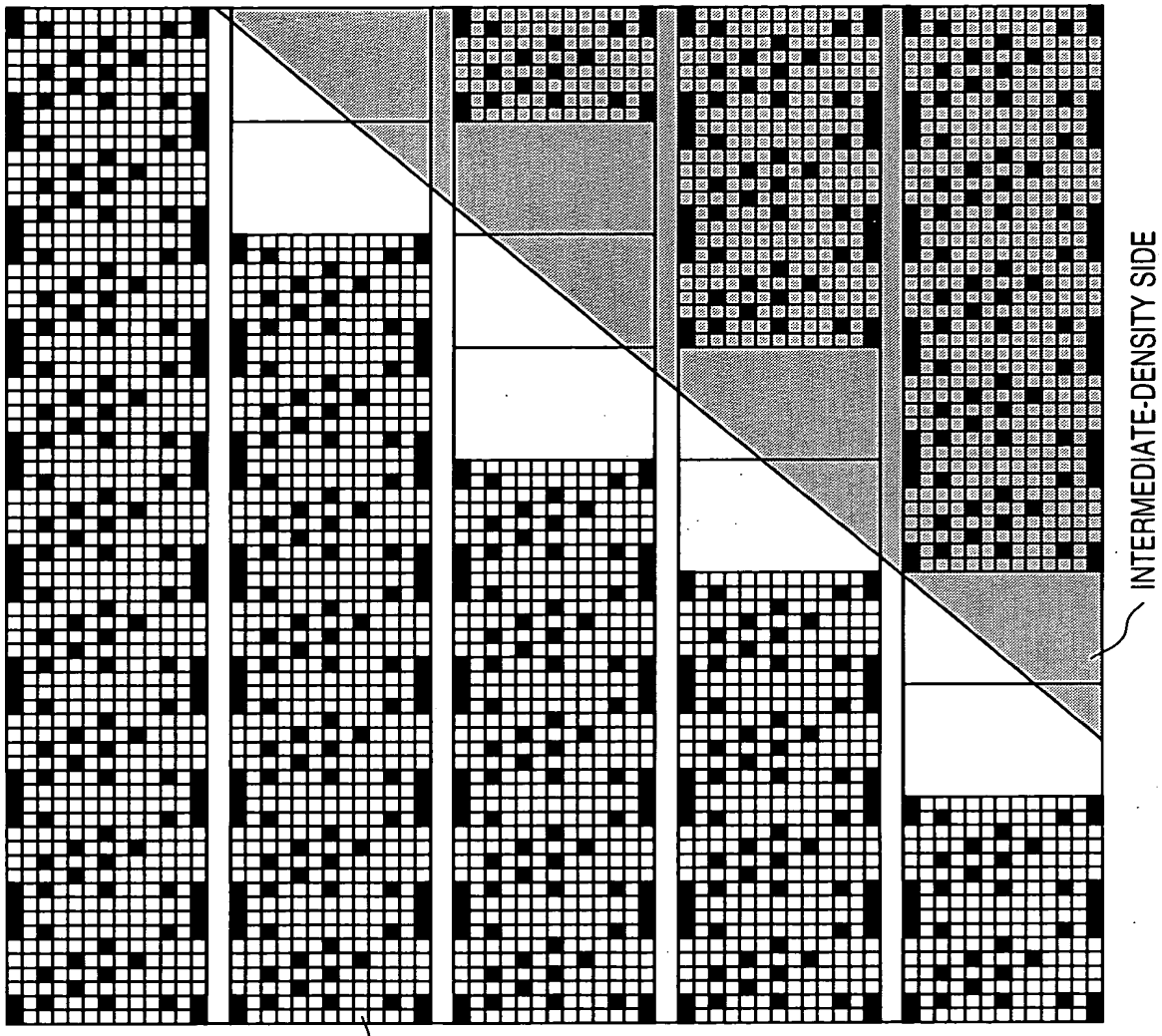


FIG. 49

FIG. 50

ADDITIONAL INFORMATION SUPERPOSITION METHOD OF THE PRESENT INVENTION

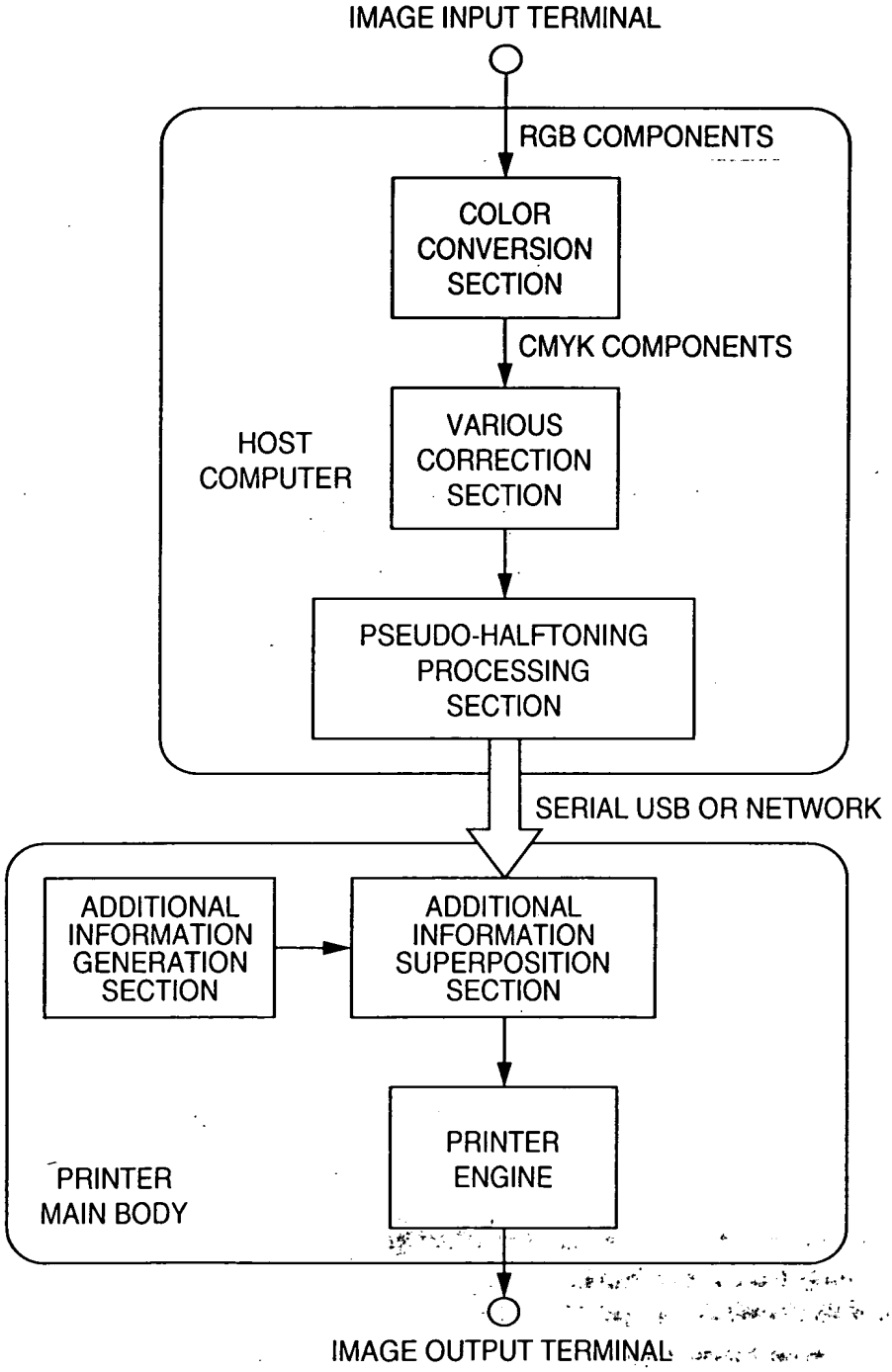


FIG. 51

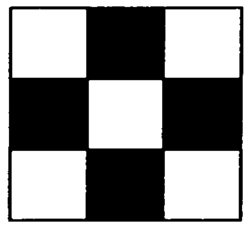


FIG. 52

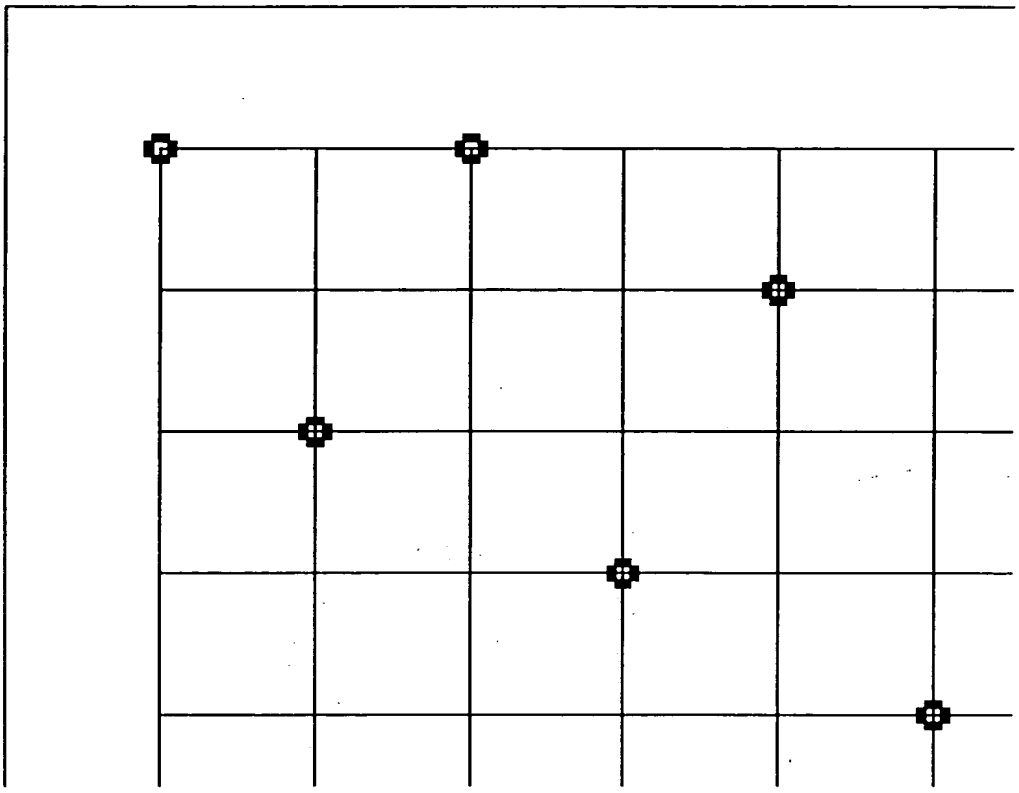


FIG. 53

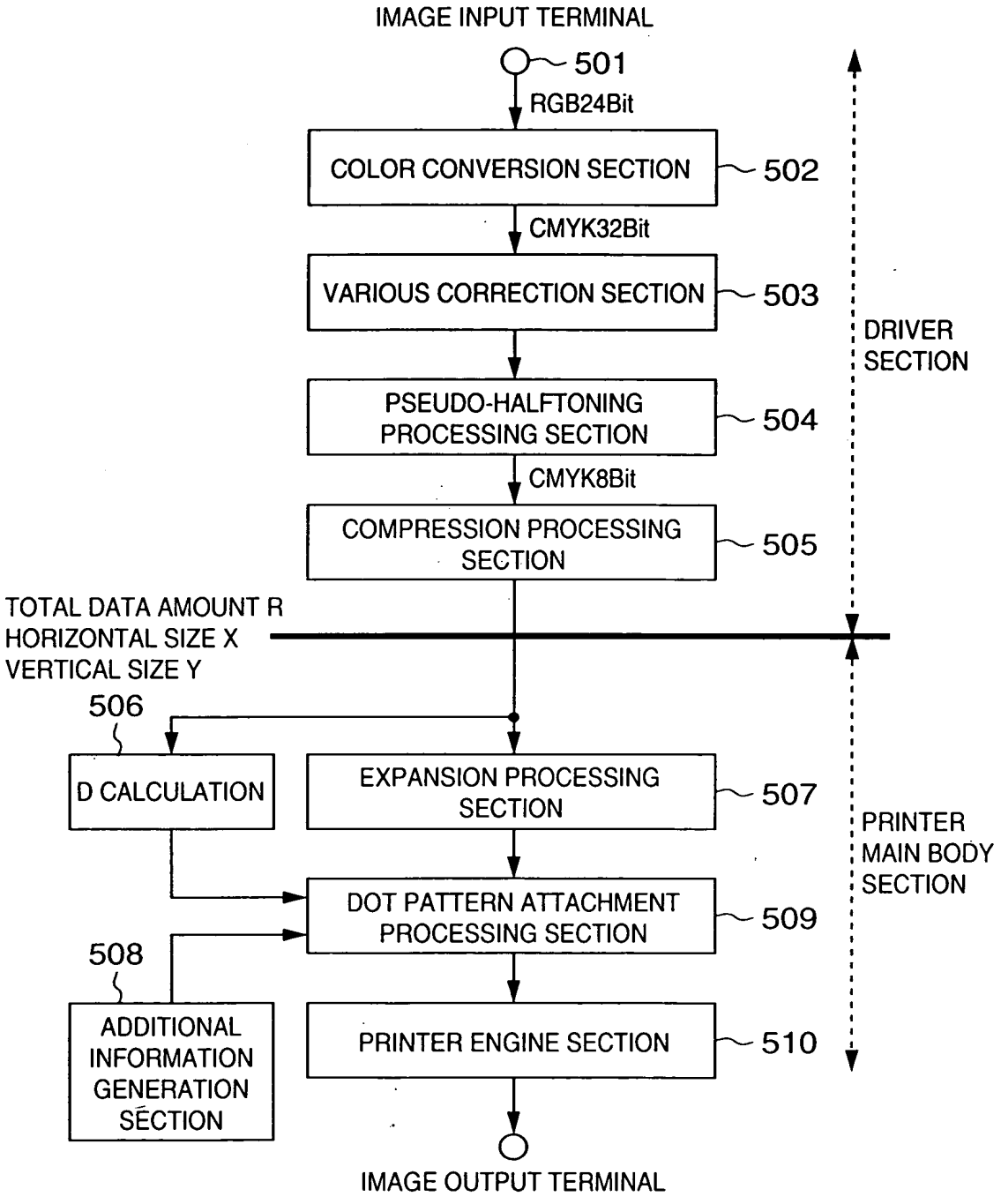


IMAGE INPUT TERMINAL
501
RGB24Bit
COLOR CONVERSION SECTION
502
CMYK32Bit
VARIOUS CORRECTION SECTION
503
PSEUDO-HALFTONING PROCESSING SECTION
504
CMYK8Bit
COMPRESSION PROCESSING SECTION
505
DRIVER SECTION
TOTAL DATA AMOUNT R
HORIZONTAL SIZE X
VERTICAL SIZE Y
506
D CALCULATION
EXPANSION PROCESSING SECTION
507
PRINTER MAIN BODY SECTION
DOT PATTERN ATTACHMENT PROCESSING SECTION
509
508
ADDITIONAL INFORMATION GENERATION SECTION
PRINTER ENGINE SECTION
510
IMAGE OUTPUT TERMINAL

FIG. 54

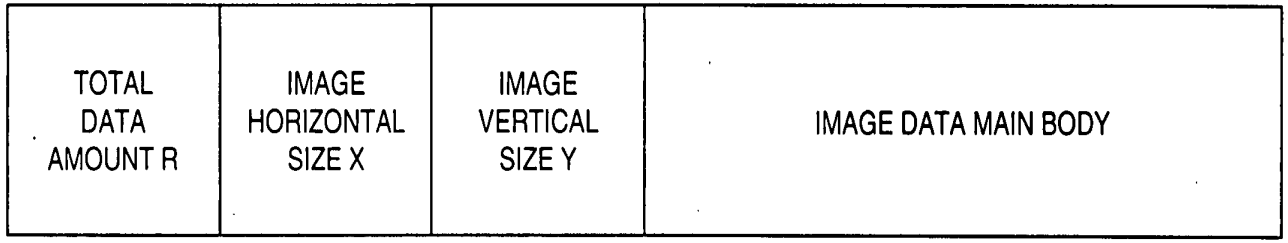


FIG. 55A

SIMPLE IMAGE

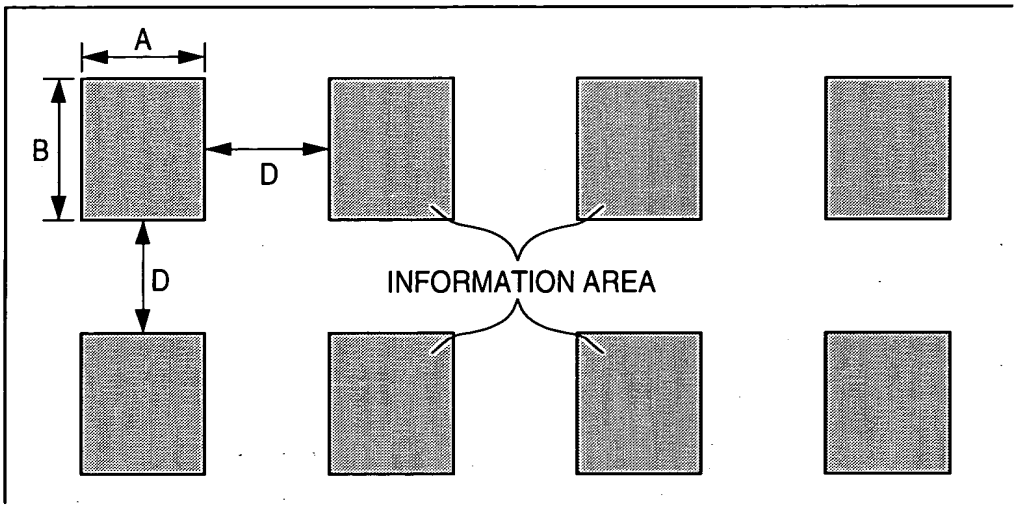


FIG. 55B

COMPLEX IMAGE

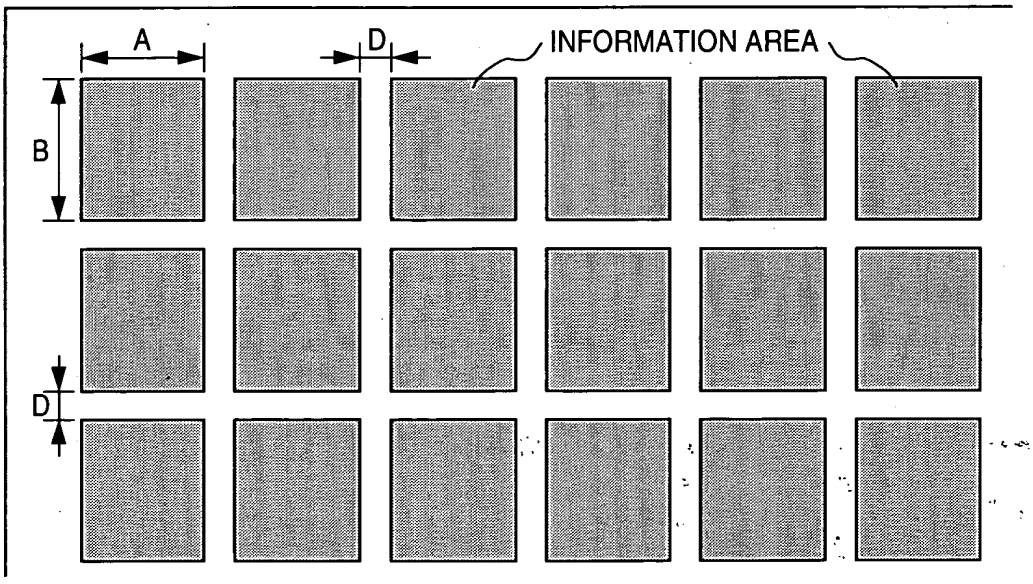


FIG. 56

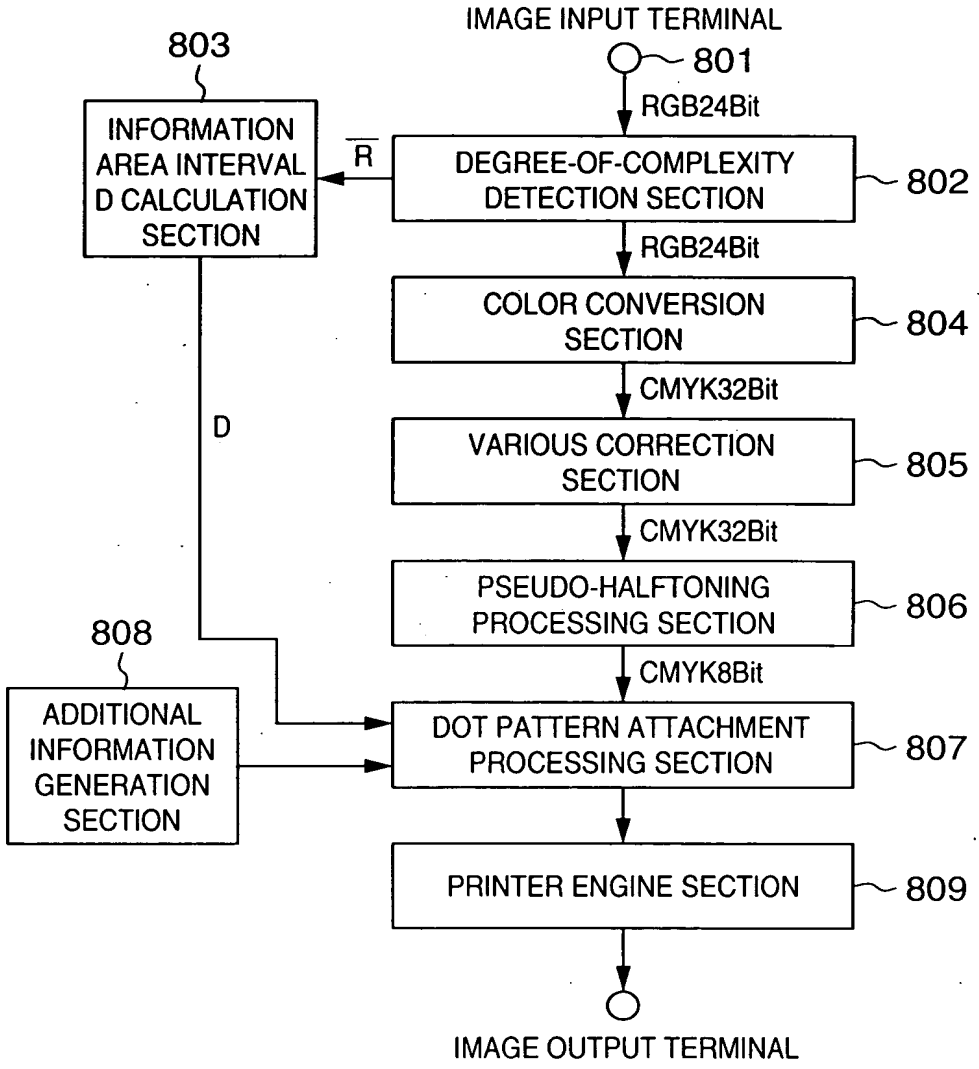


FIG. 57

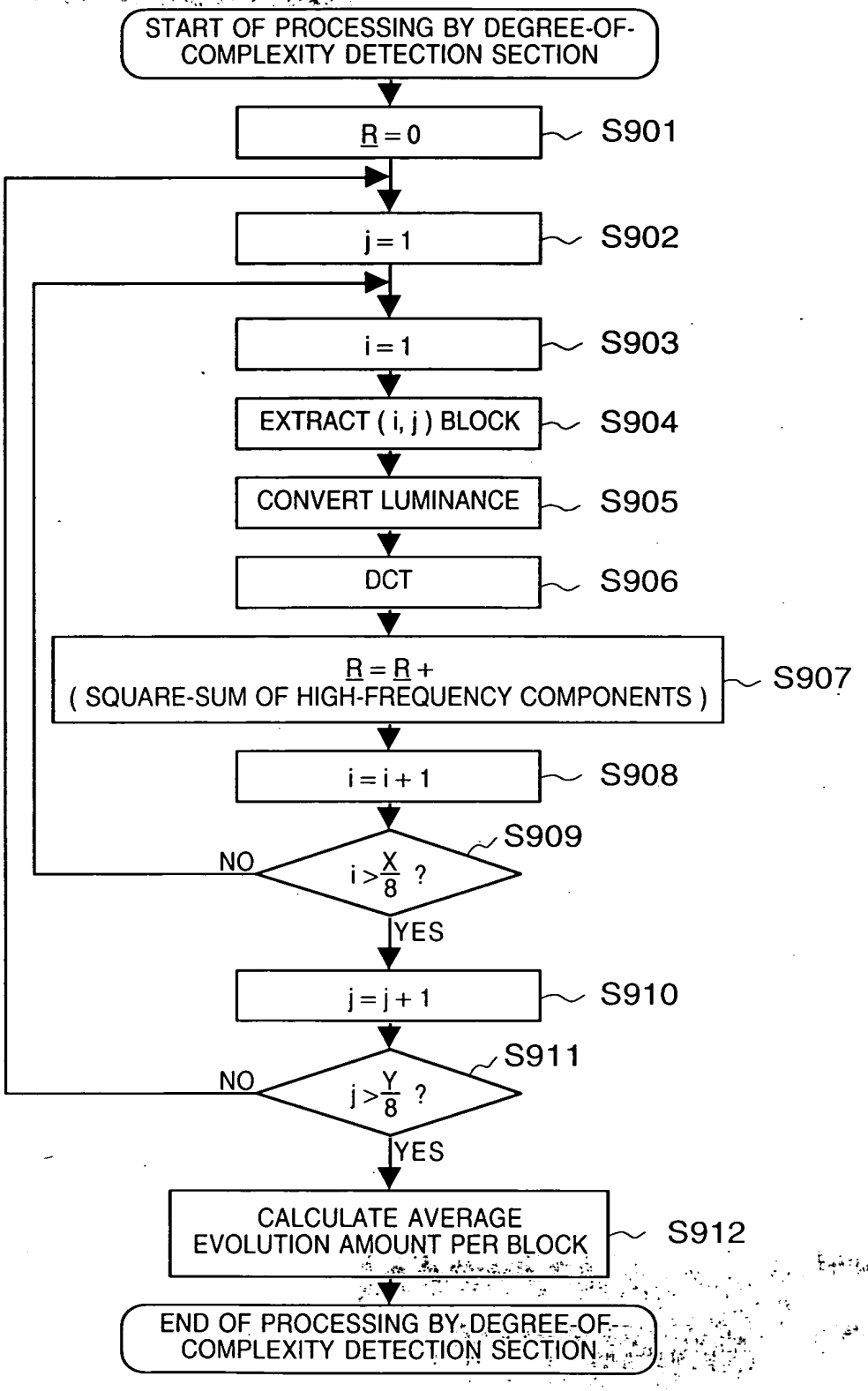


FIG. 58

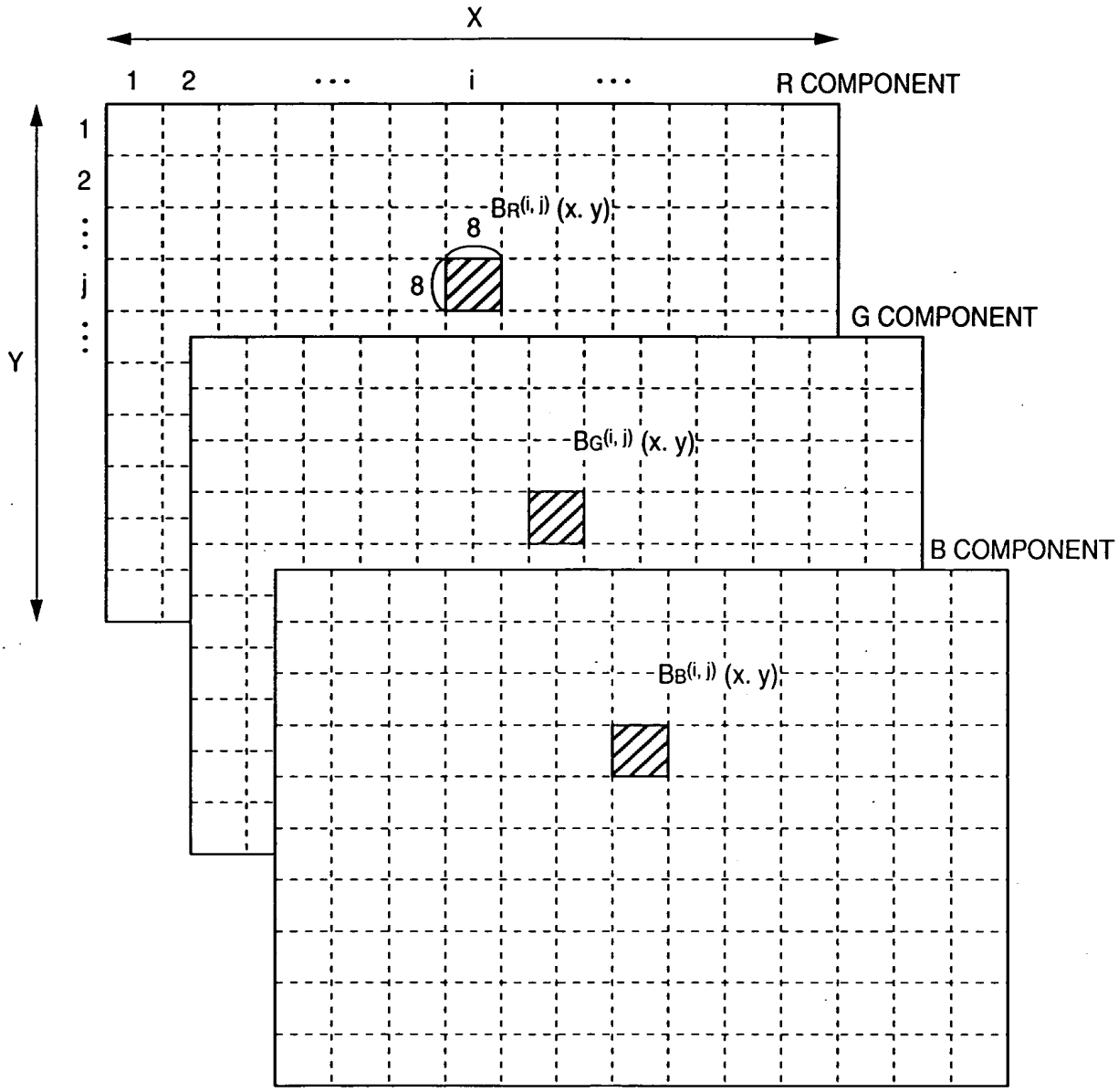


FIG. 59

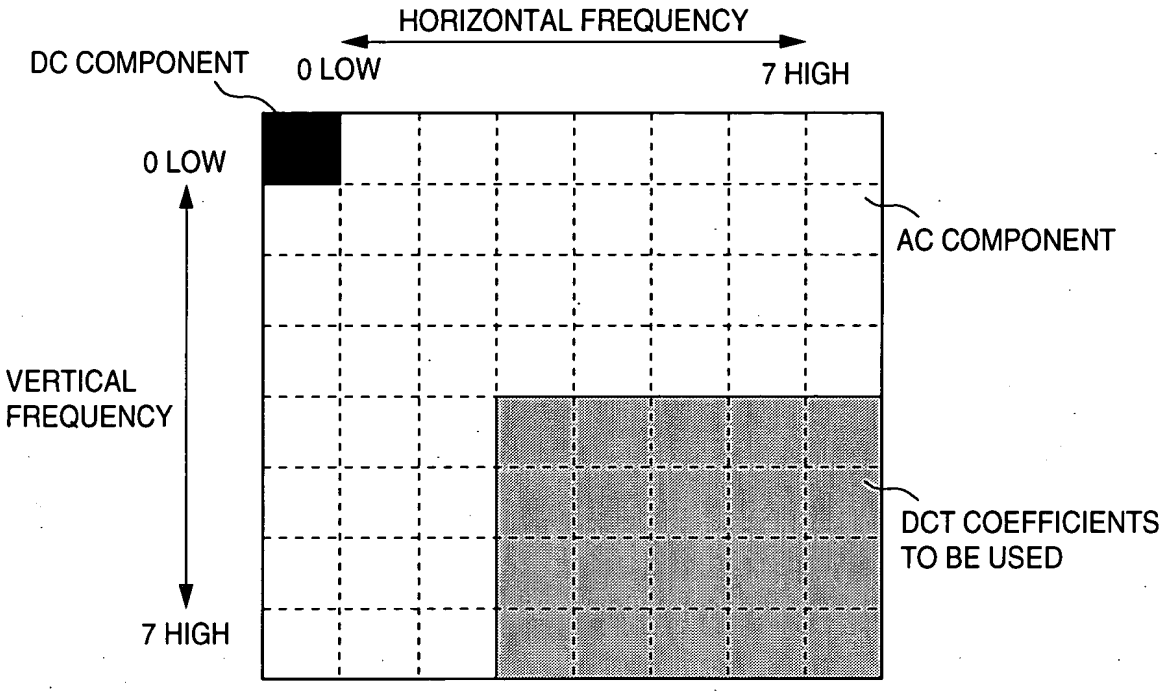


FIG. 60

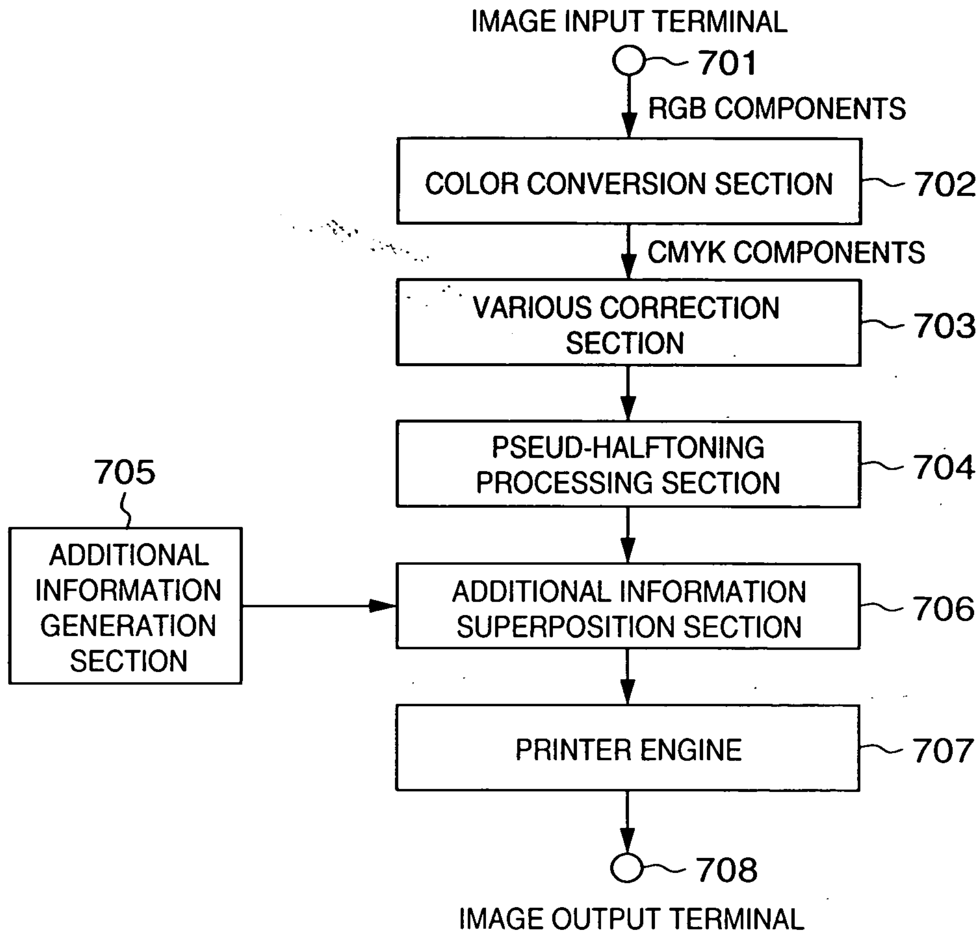


FIG. 61

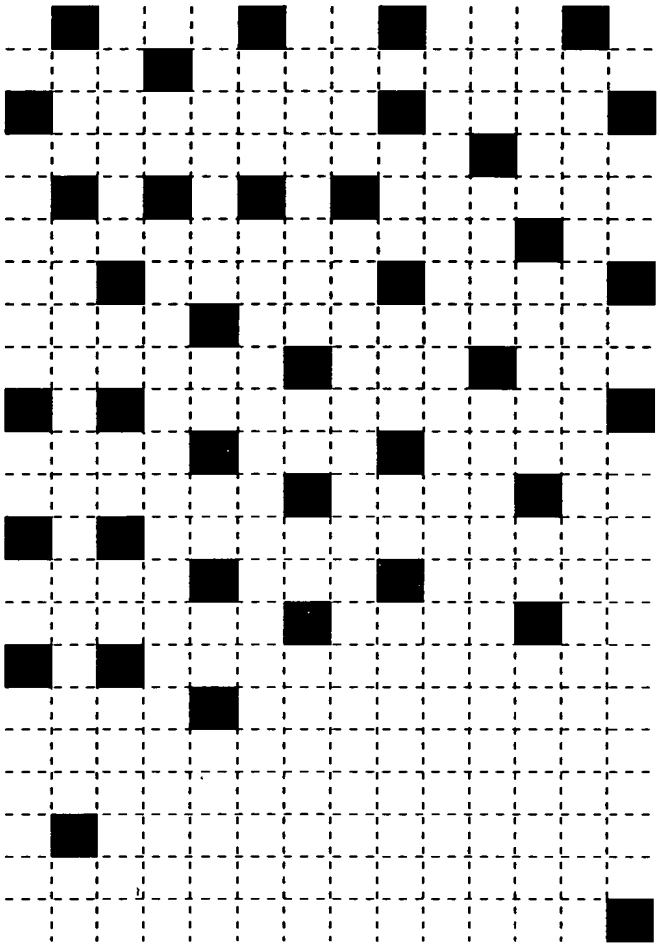
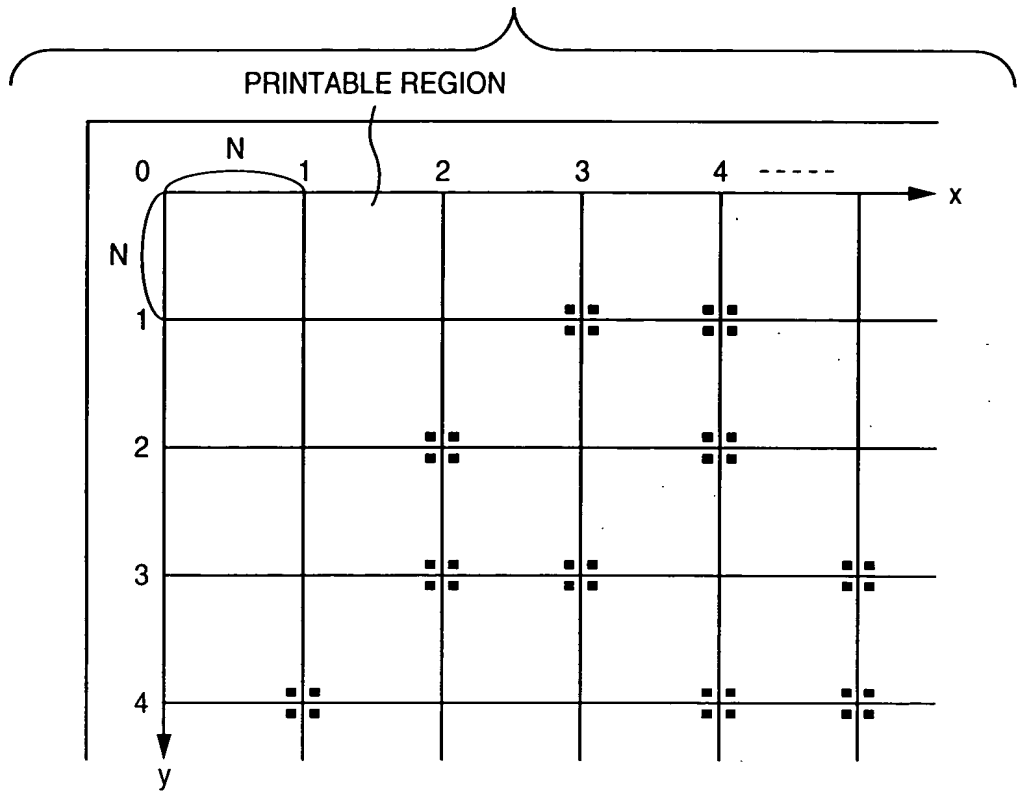


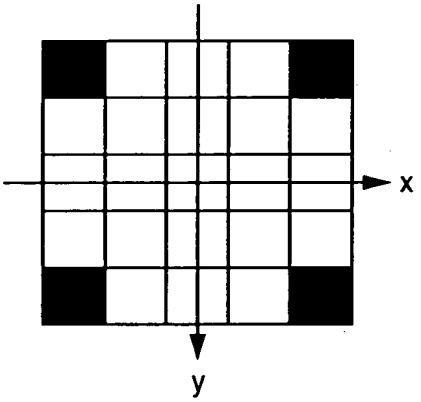
FIG. 62



MATRIX INTERVAL	N
NUMBER z	ATTACHMENT POSITION (Lx^z, Ly^z)
1	(1, 1)
2	(1, 3)
3	(1, 4)
⋮	⋮
z	(Lx^z, Ly^z)

FIG. 63A

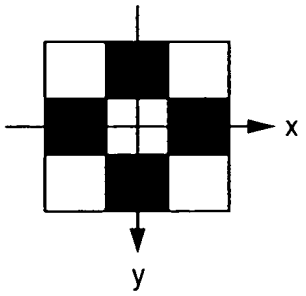
DOT PATTERN FOR LOW-DENSITY REGION



PIXEL COUNT C OF PATTERN	4
NUMBER c	PIXEL POSITION (Plx^c, Ply^c)
1	(2, –2)
2	(–2, –2)
3	(2, 2)
4	(–2, 2)

FIG. 63B

DOT PATTERN FOR HIGH-DENSITY REGION



PIXEL COUNT C OF PATTERN	4
NUMBER c	PIXEL POSITION (Phx^c, Phy^c)
1	(1, 0)
2	(0, –1)
3	(–1, 0)
4	(0, 1)

FIG. 64

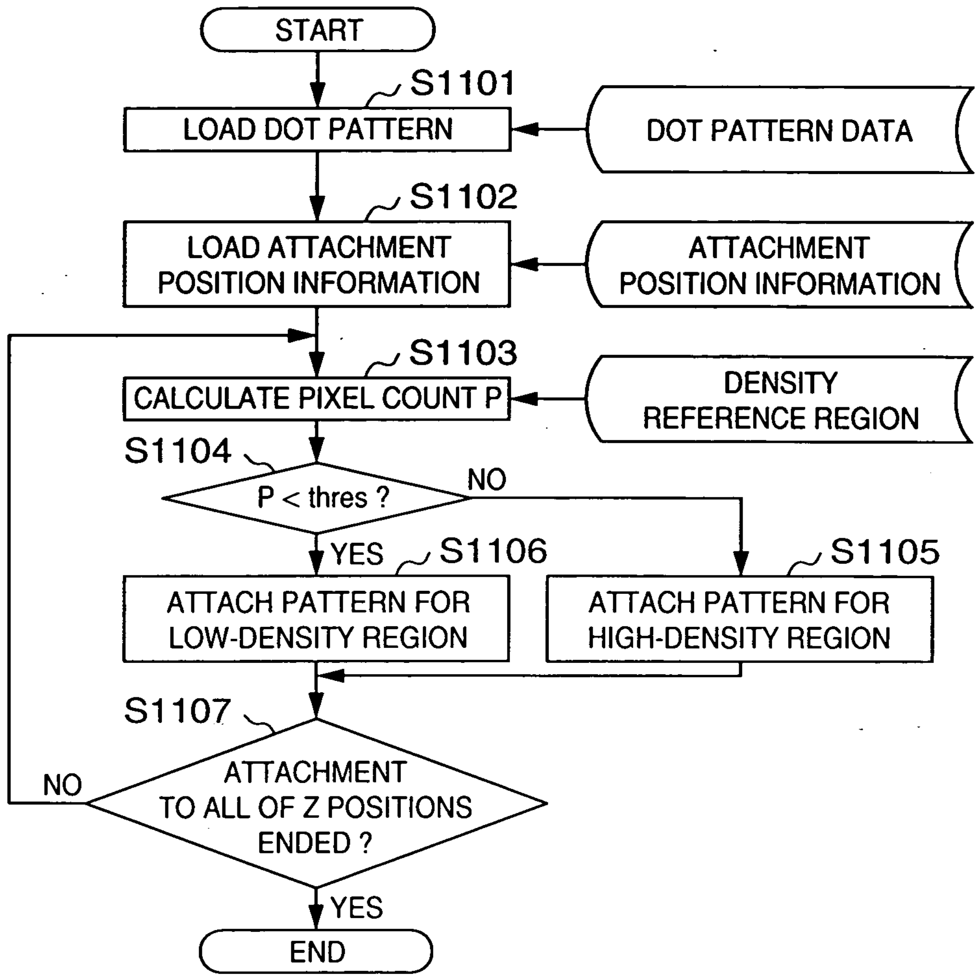


FIG. 65

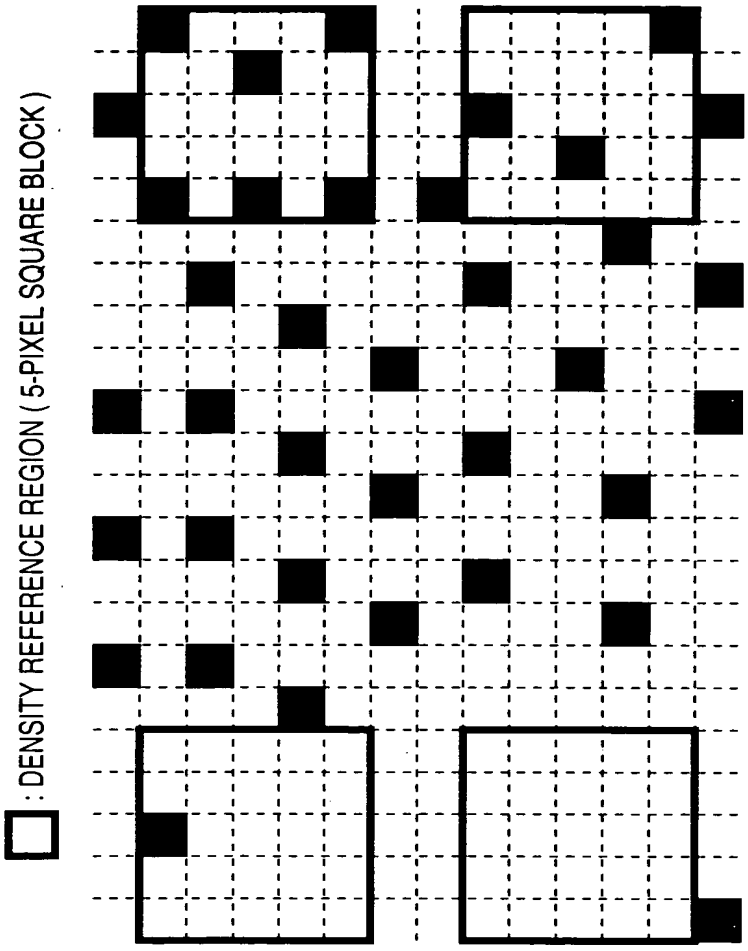


FIG. 66

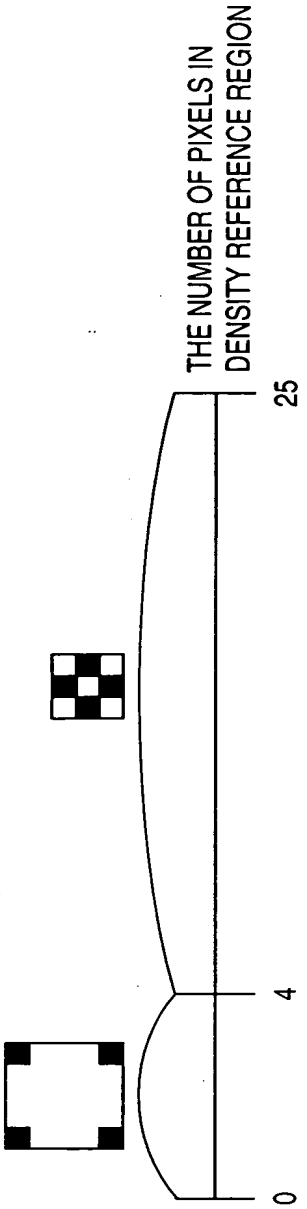


FIG. 67A

IMAGE BEFORE DOT PATTERN ATTACHMENT

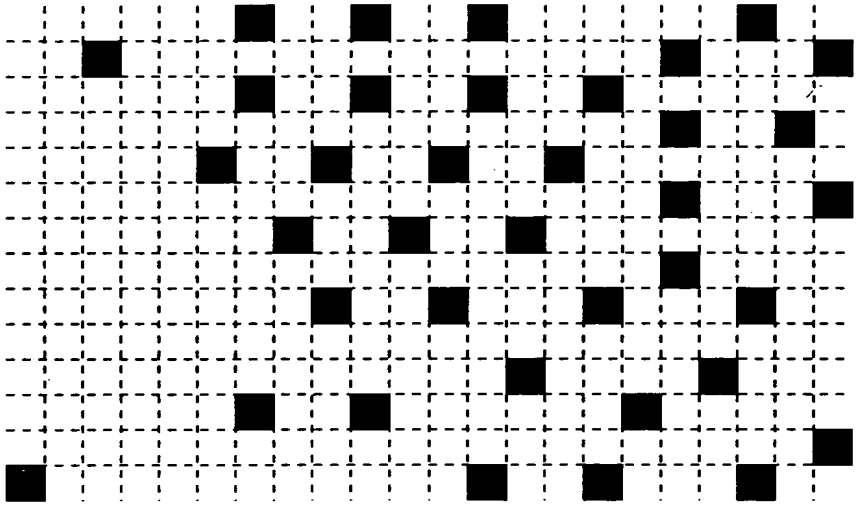
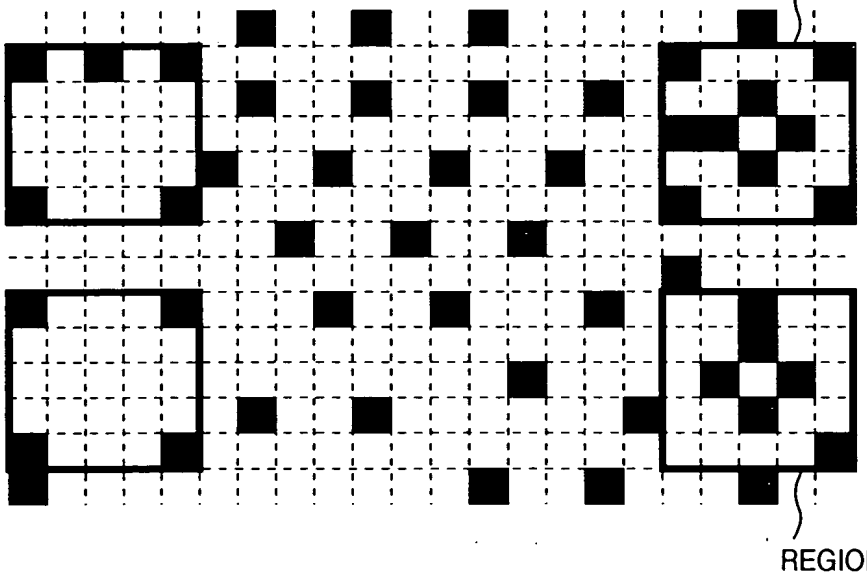


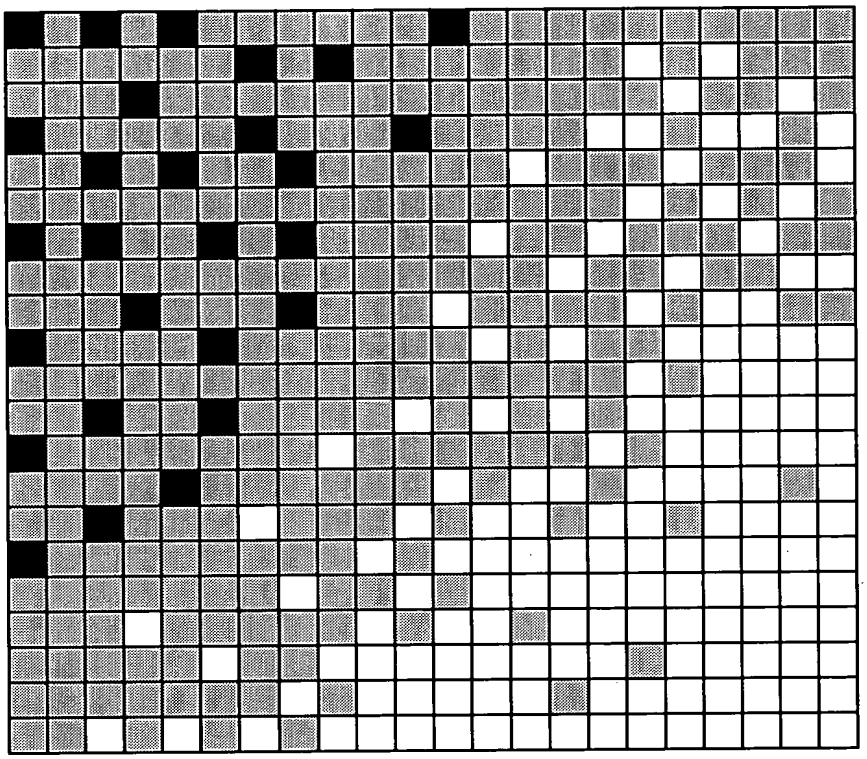
FIG. 67B

IMAGE AFTER DOT PATTERN ATTACHMENT



: DOT PATTERN ATTACHMENT REGION

FIG. 68



■ : DENSITY LEVEL 2

▒ : DENSITY LEVEL 1

□ : DENSITY LEVEL 0

FIG. 69

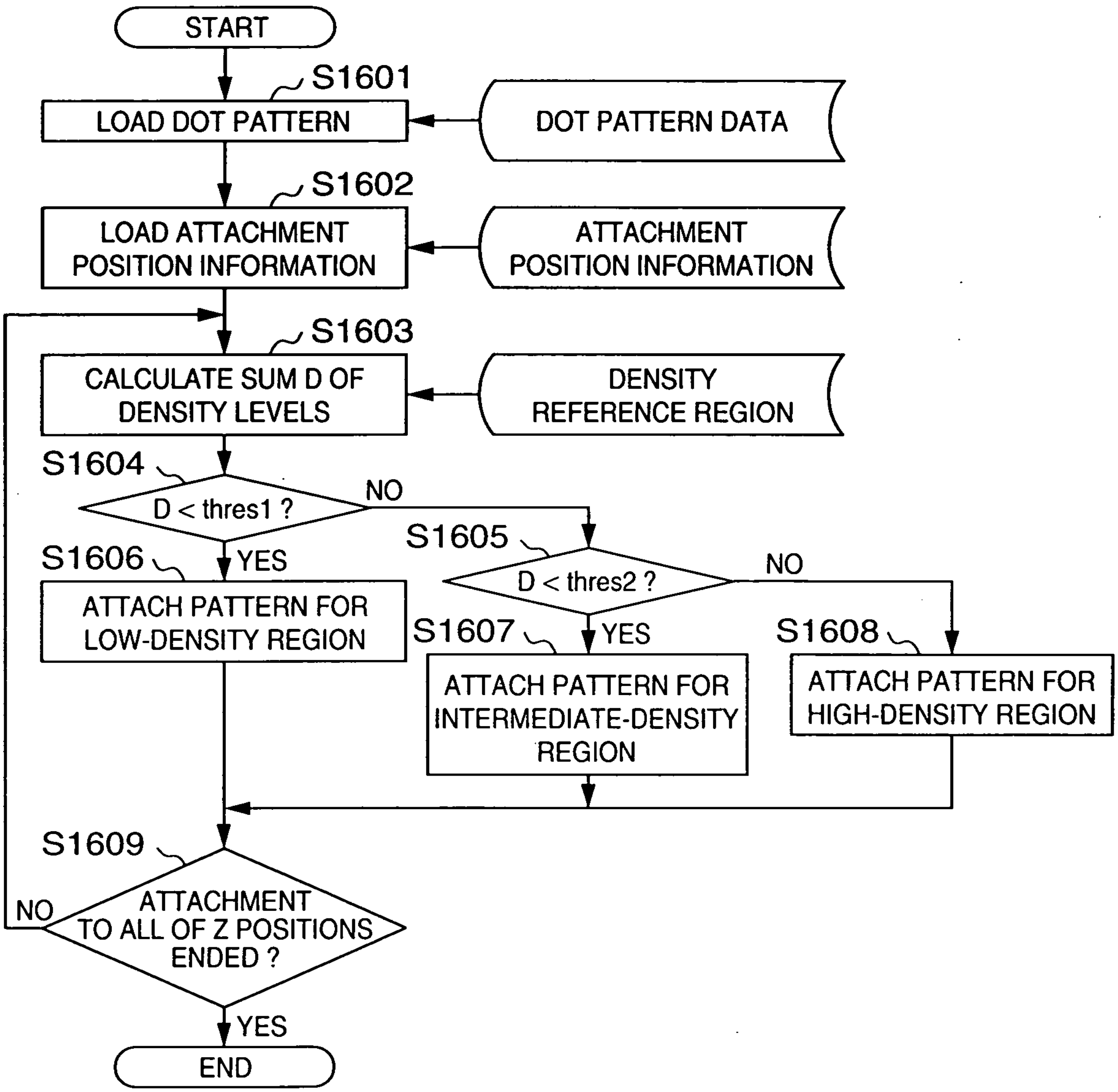
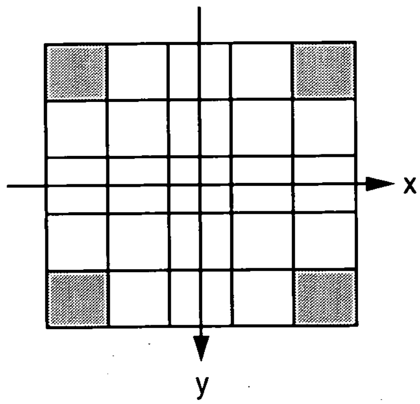


FIG. 70A

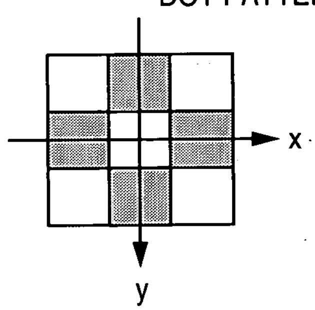
DOT PATTERN FOR LOW-DENSITY REGION



PIXEL COUNT C OF PATTERN	4
DENSITY LEVEL V	–1
NUMBER c	PIXEL POSITION (Plx^c, Ply^c)
1	(2, –2)
2	(–2, –2)
3	(–2, 2)
4	(2, 2)

FIG. 70B

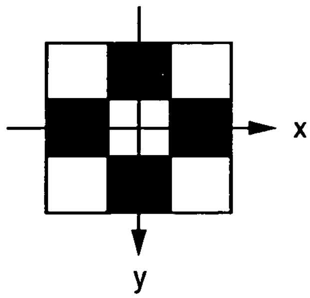
DOT PATTERN FOR INTERMEDIATE-DENSITY REGION



PIXEL COUNT C OF PATTERN	4
DENSITY LEVEL V	1
NUMBER c	PIXEL POSITION (Pmx^c, Pmy^c)
1	(1, 0)
2	(0, –1)
3	(–1, 0)
4	(0, 1)

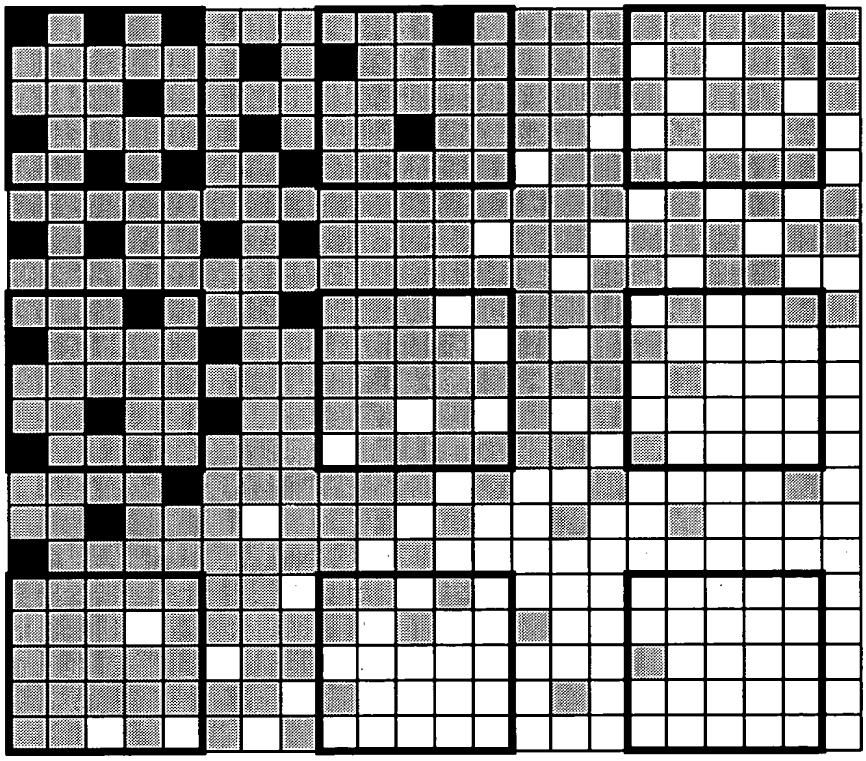
FIG. 71

DOT PATTERN FOR HIGH-DENSITY REGION



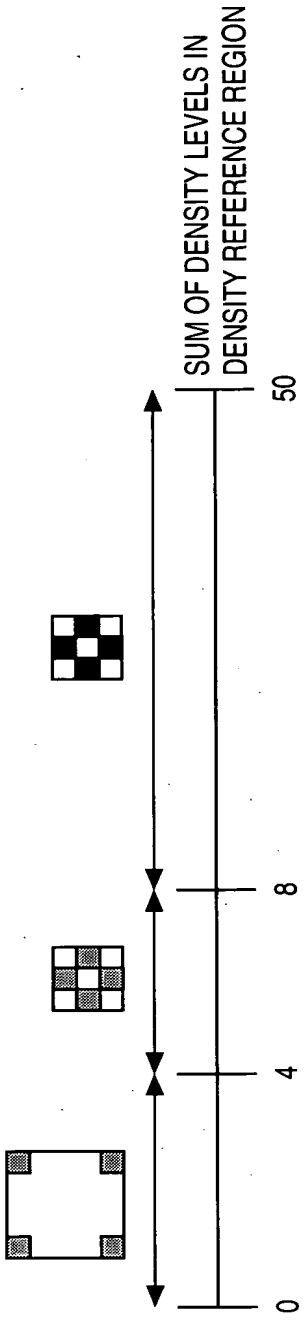
PIXEL COUNT C OF PATTERN	4
DENSITY LEVEL V	2
NUMBER c	PIXEL POSITION (Phx^c, Phy^c)
1	(1, 0)
2	(0, −1)
3	(−1, 0)
4	(0, 1)

FIG. 72



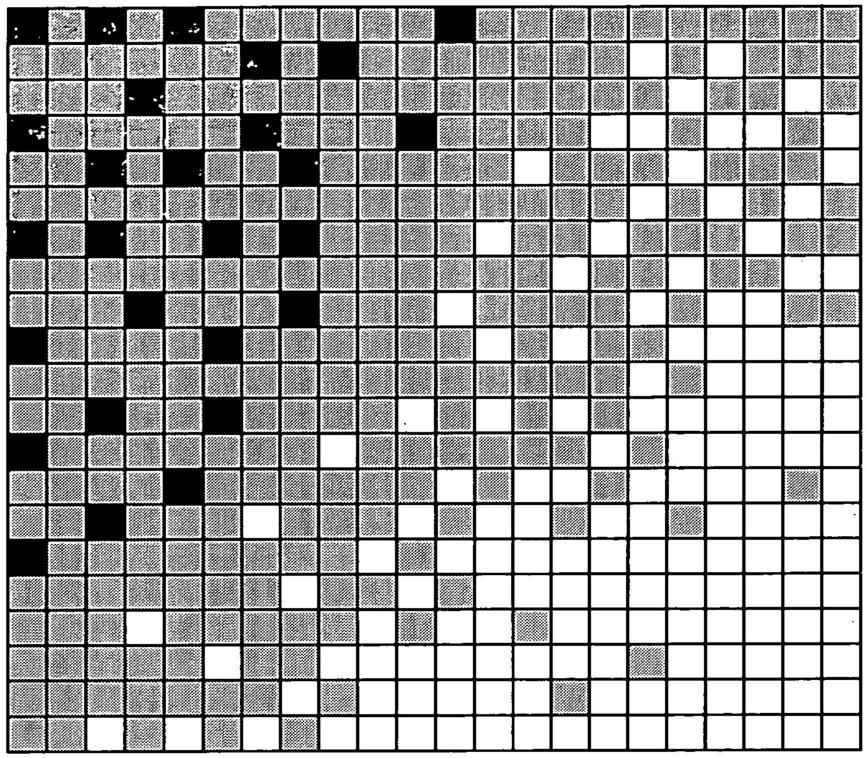
: DENSITY REFERENCE REGION
(5-PIXEL SQUARE BLOCK)

FIG. 73



F I G. 74A

IMAGE BEFORE DOT PATTERN ATTACHMENT



F I G. 74B

IMAGE AFTER DOT PATTERN ATTACHMENT

□ : DENSITY REFERENCE REGION (5-PIXEL SQUARE BLOCK)

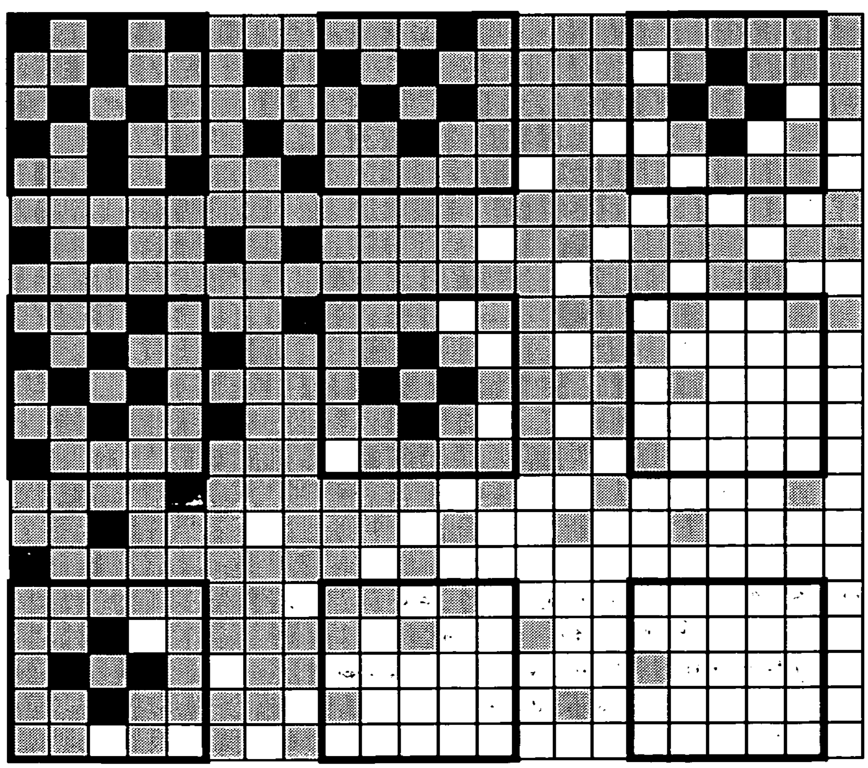


FIG. 75

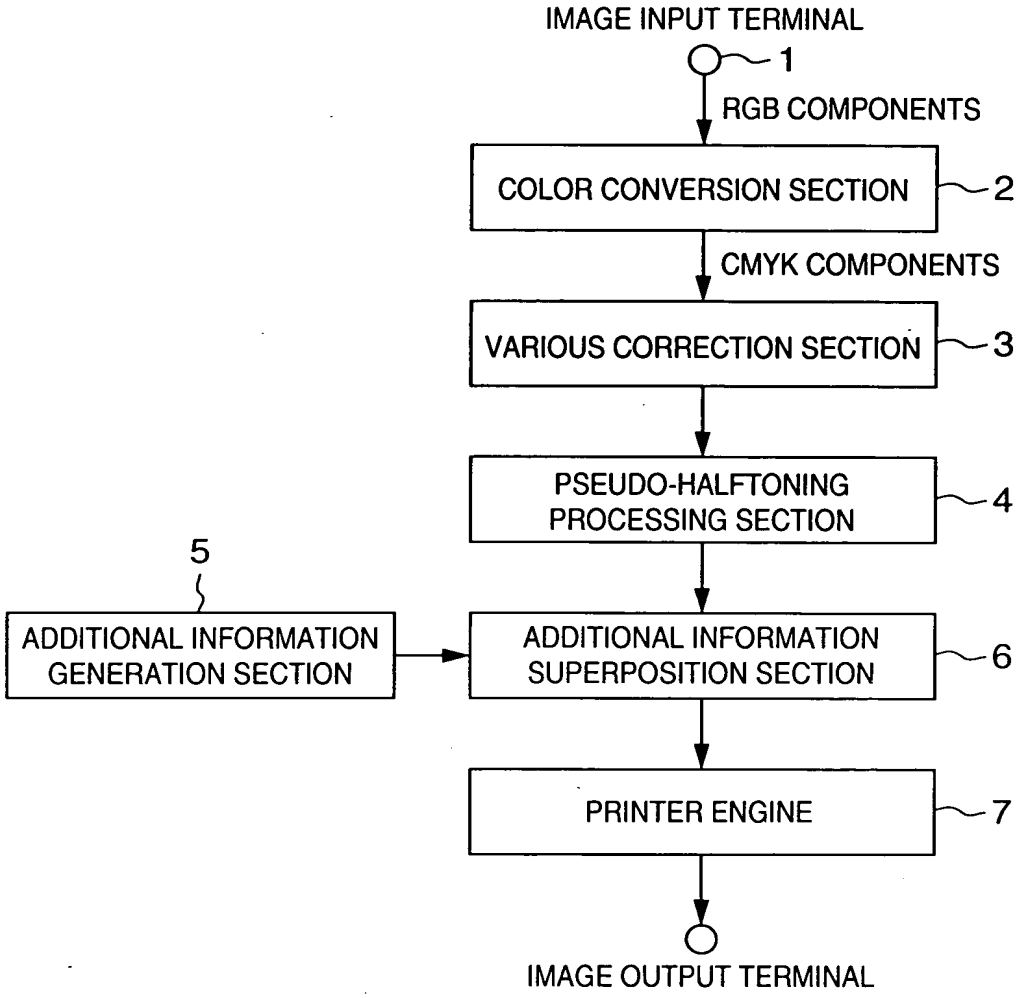
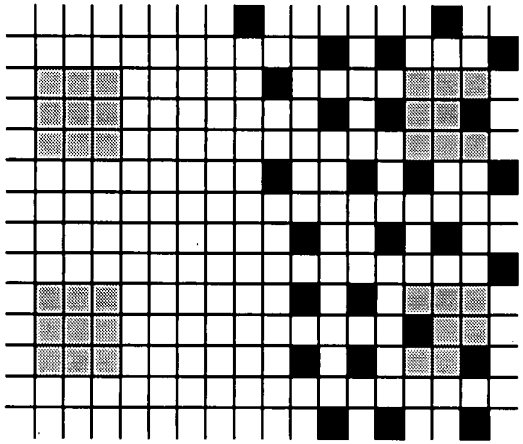


FIG. 76A

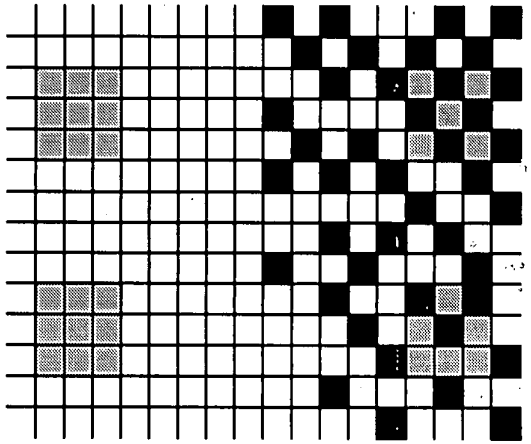
: DOT PATTERN ATTACHMENT REGION



CYAN PLANE

FIG. 76B

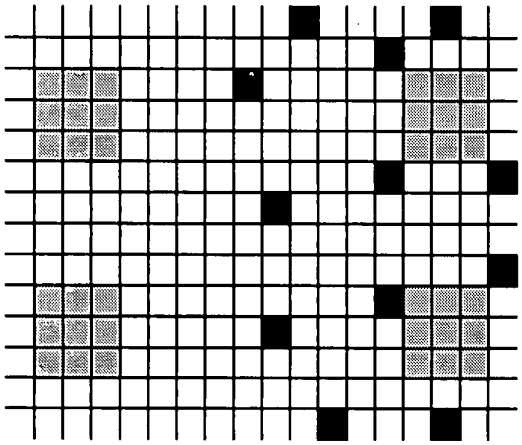
: DOT PATTERN ATTACHMENT REGION



MAGENTA PLANE

FIG. 76C

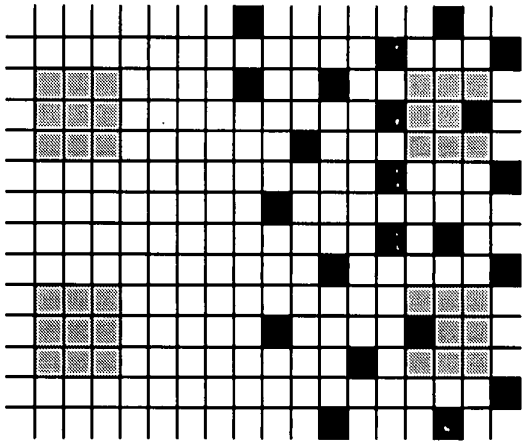
: DOT PATTERN ATTACHMENT REGION



BLACK PLANE

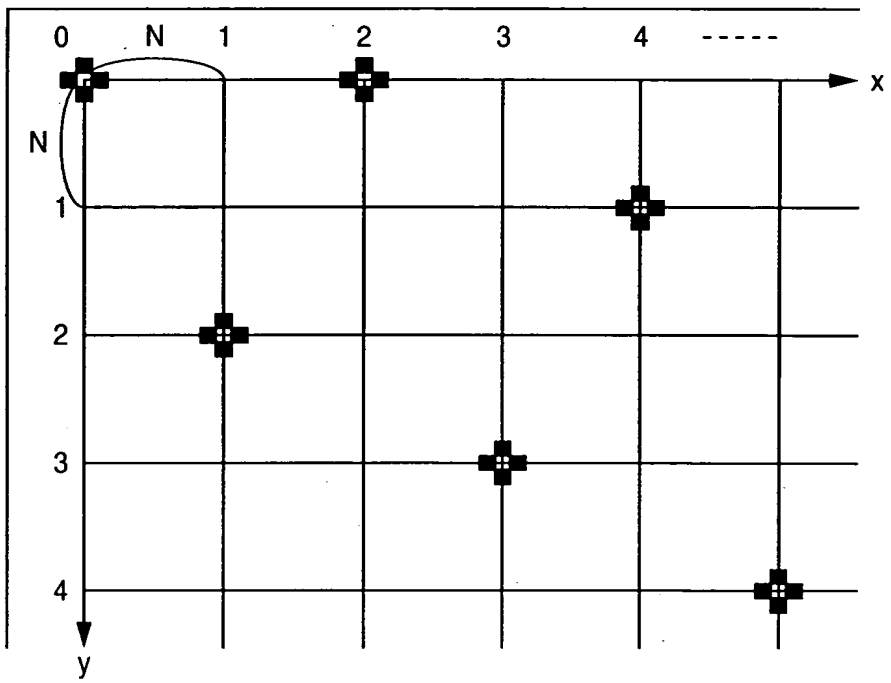
FIG. 76D

: DOT PATTERN ATTACHMENT REGION



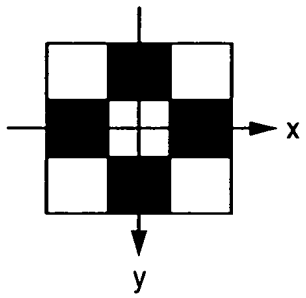
YELLOW PLANE

FIG. 77



MATRIX INTERVAL	N
NUMBER z	ATTACHMENT POSITION (Lx^z, Ly^z)
1	(0, 0)
2	(2, 0)
3	(4, 1)
⋮	⋮
z	(Lx^z, Ly^z)

FIG. 78



PIXEL COUNT C OF PATTERN	4
NUMBER c	PIXEL POSITION (Px, Py)
1	(1, 0)
2	(0, −1)
3	(−1, 0)
4	(0, −1)

FIG. 79

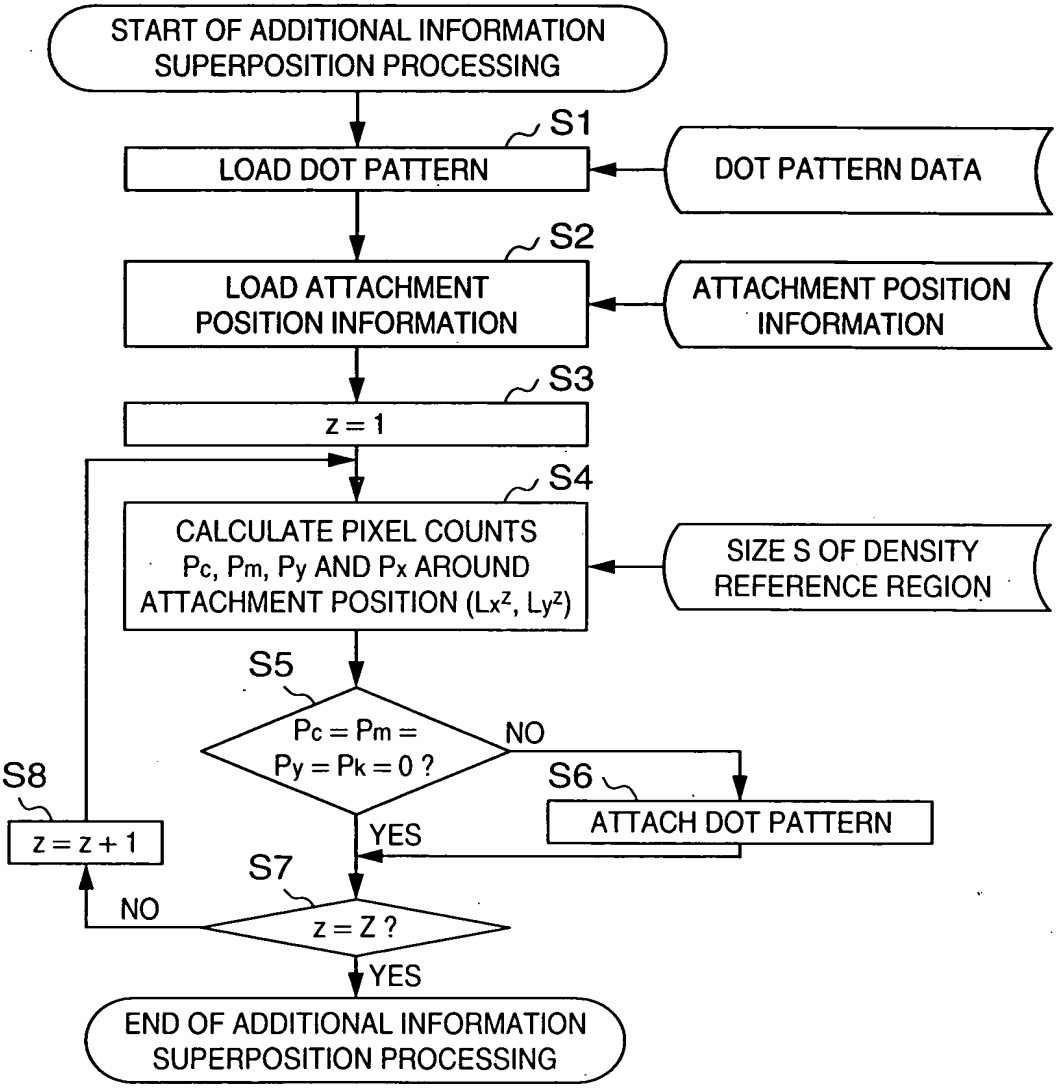


FIG. 80A

CYAN PLANE

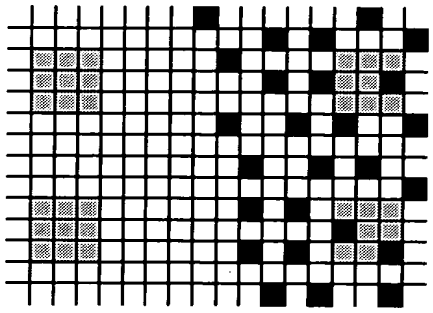


FIG. 80B

MAGENTA PLANE

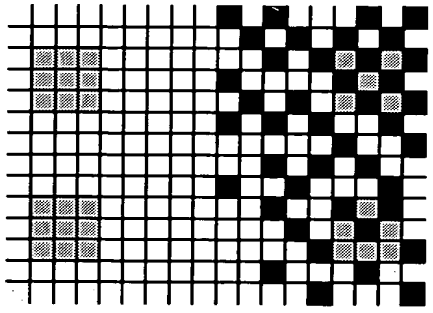


FIG. 80C

BLACK PLANE

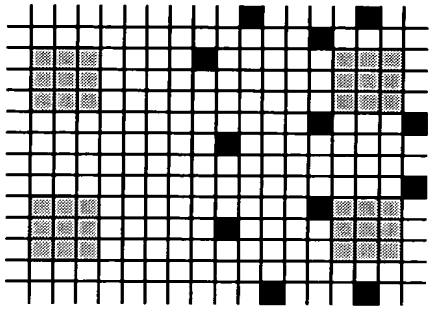
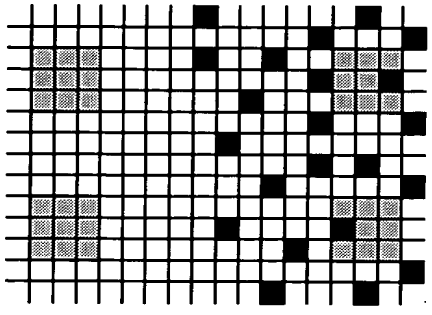


FIG. 80D

YELLOW PLANE



: DENSITY REFERENCE REGION
(3-PIXEL SQUARE BLOCK)

FIG. 81A

CYAN PLANE

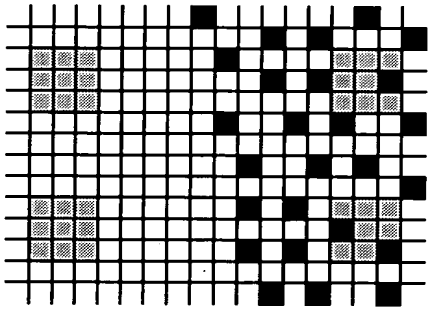


FIG. 81B

MAGENTA PLANE

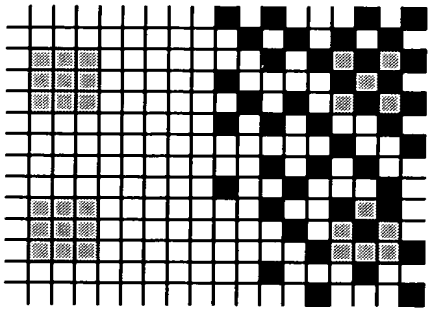


FIG. 81C

BLACK PLANE

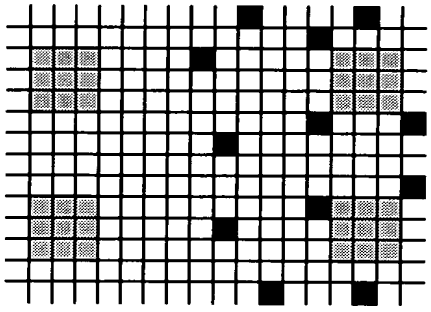
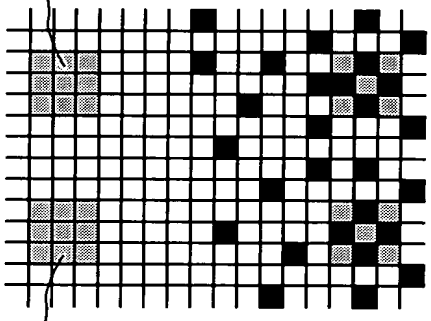


FIG. 81D

REGION A

YELLOW PLANE



REGION B

FIG. 82A

CYAN PLANE

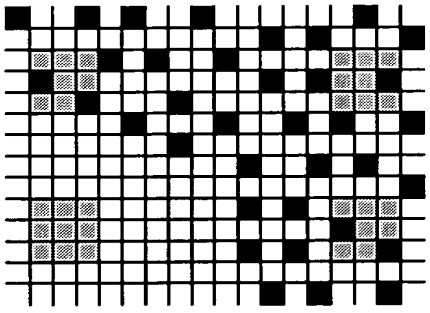


FIG. 82B

MAGENTA PLANE

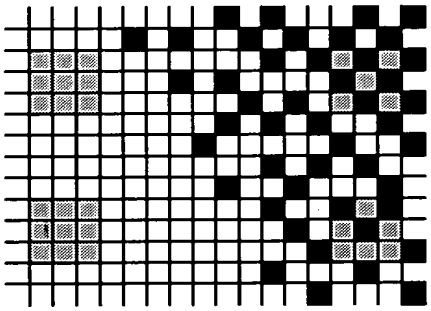


FIG. 82C

BLOCK PLANE

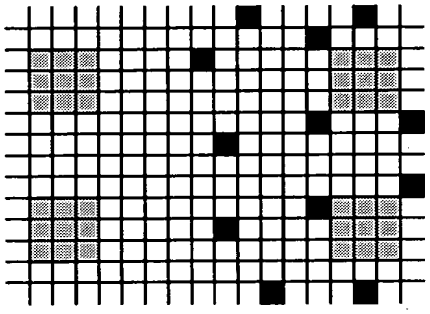


FIG. 82D

YELLOW PLANE

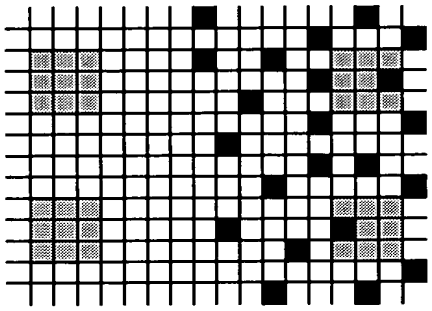


FIG. 83

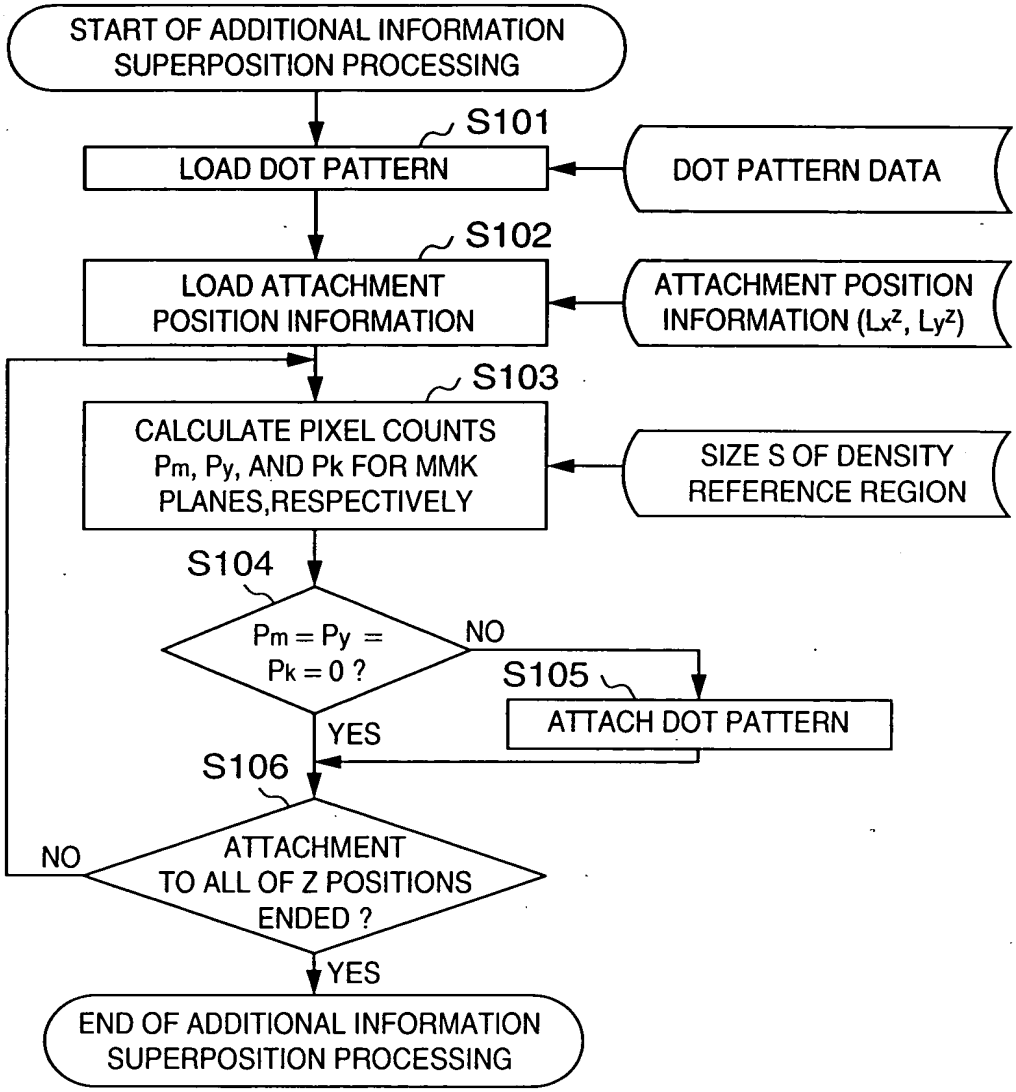


FIG. 84A

CYAN PLANE

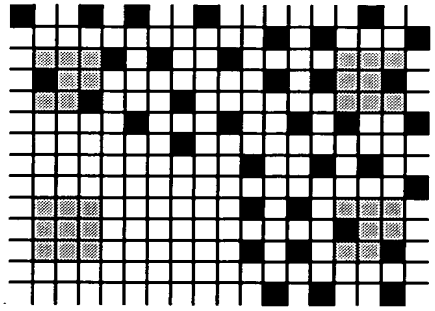


FIG. 84B

MAGENTA PLANE

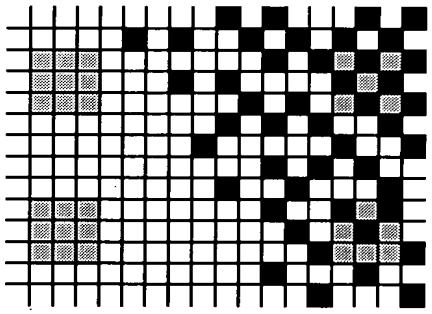


FIG. 84C

BLACK PLANE

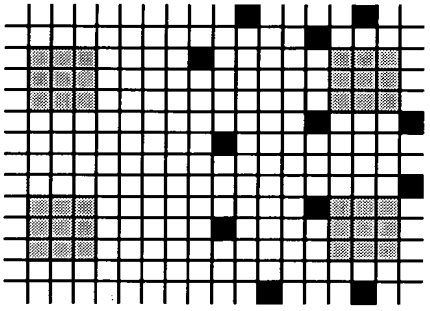
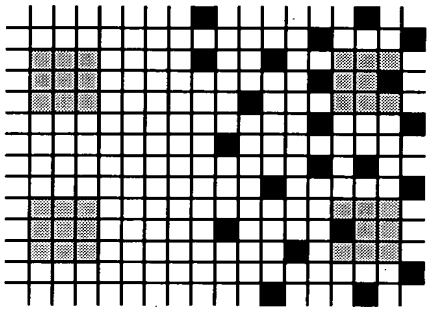


FIG. 84D

YELLOW PLANE



: DENSITY REFERENCE REGION
(3-PIXEL SQUARE BLOCK)

FIG. 85A

CYAN PLANE

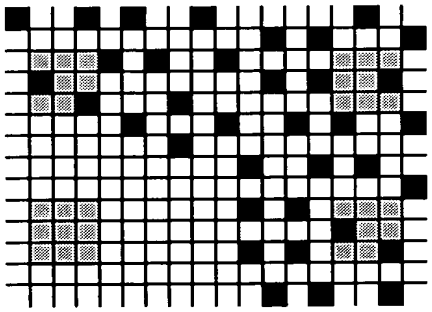


FIG. 85B

MAGENTA PLANE

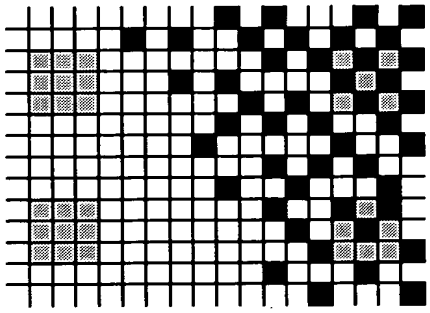


FIG. 85C

BLACK PLANE

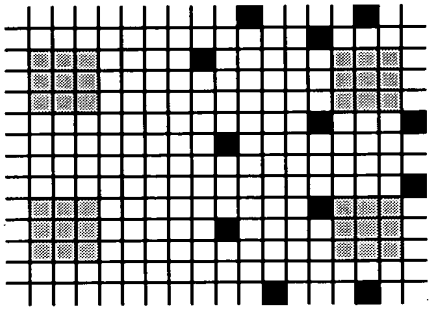
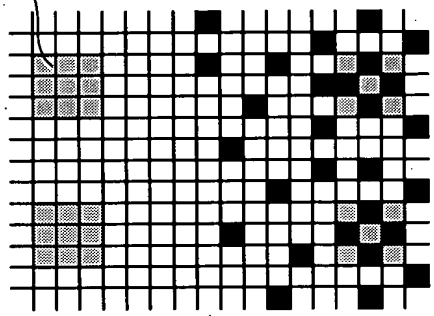


FIG. 85D

REGION A

YELLOW PLANE



: DOT PATTERN ATTACHMENT REGION

F I G. 86

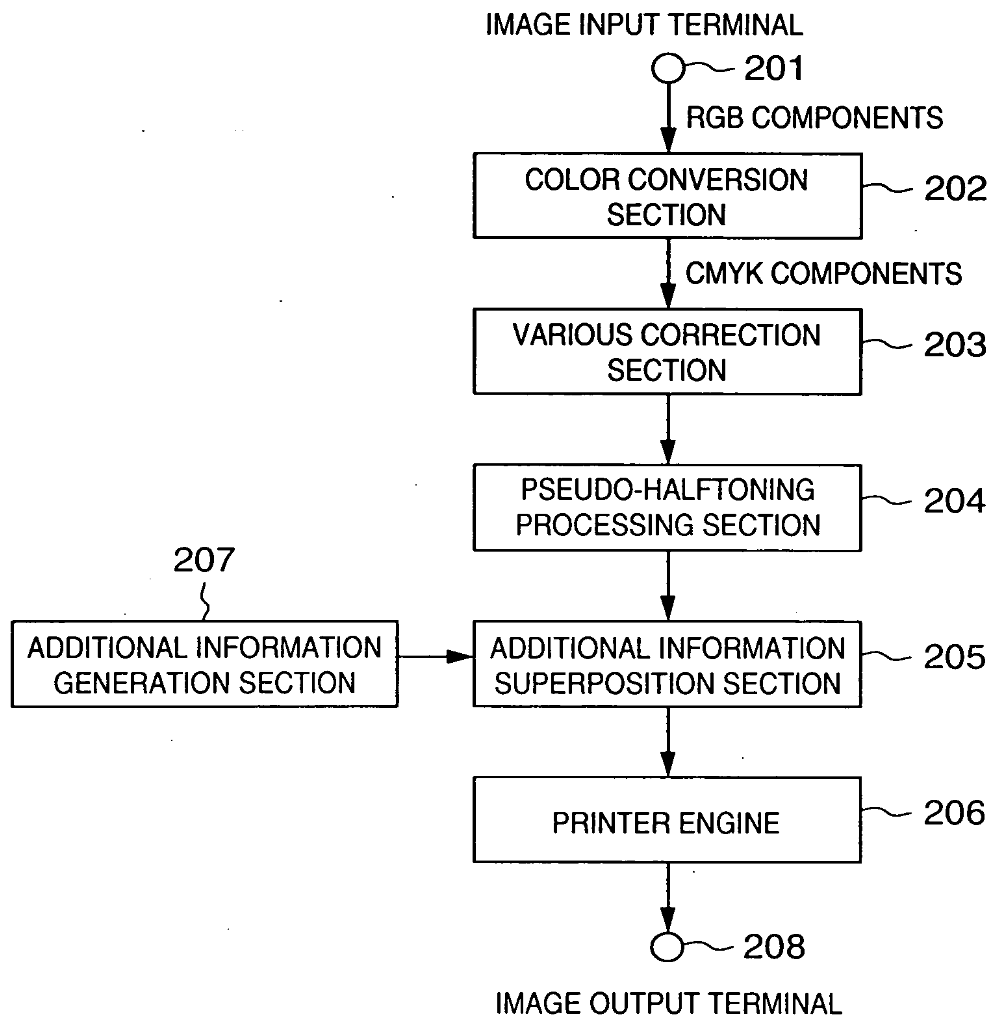


FIG. 87

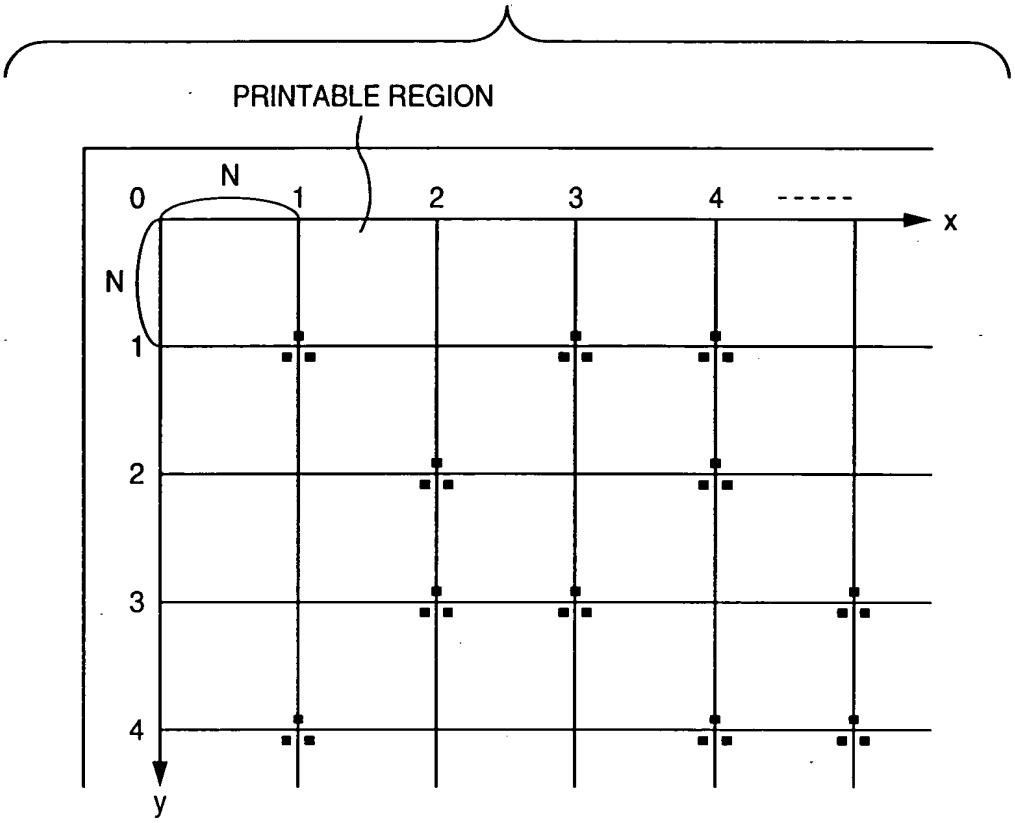
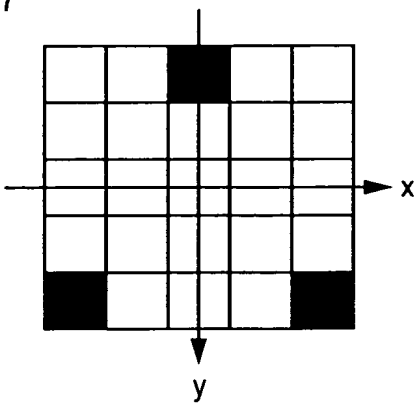
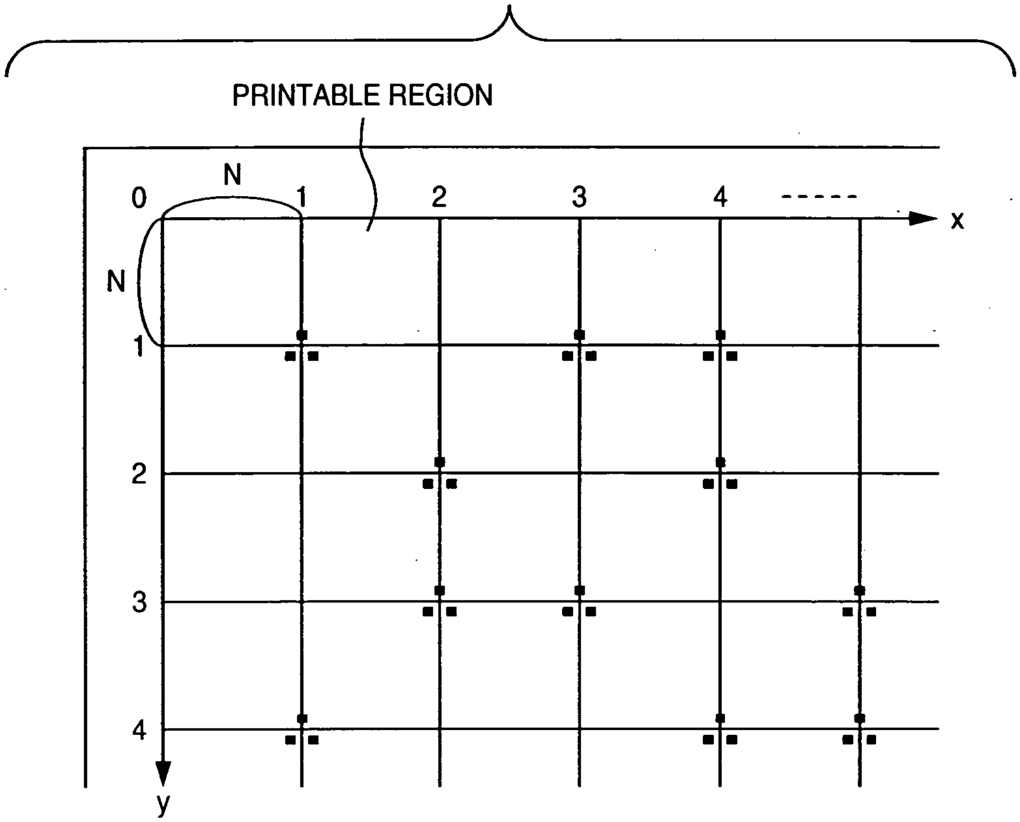


FIG. 88



PIXEL COUNT M OF PATTERN	4
NUMBER m	PIXEL POSITION (Px^m, Py^m)
1	(0, –2)
2	(–2, 2)
3	(2, 2)

FIG. 89



MATRIX INTERVAL	N
NUMBER z	ATTACHMENT POSITION (Lx^z, Ly^z)
1	(1, 1)
2	(1, 3)
3	(1, 4)
⋮	⋮
z	(Lx^z, Ly^z)

FIG. 90

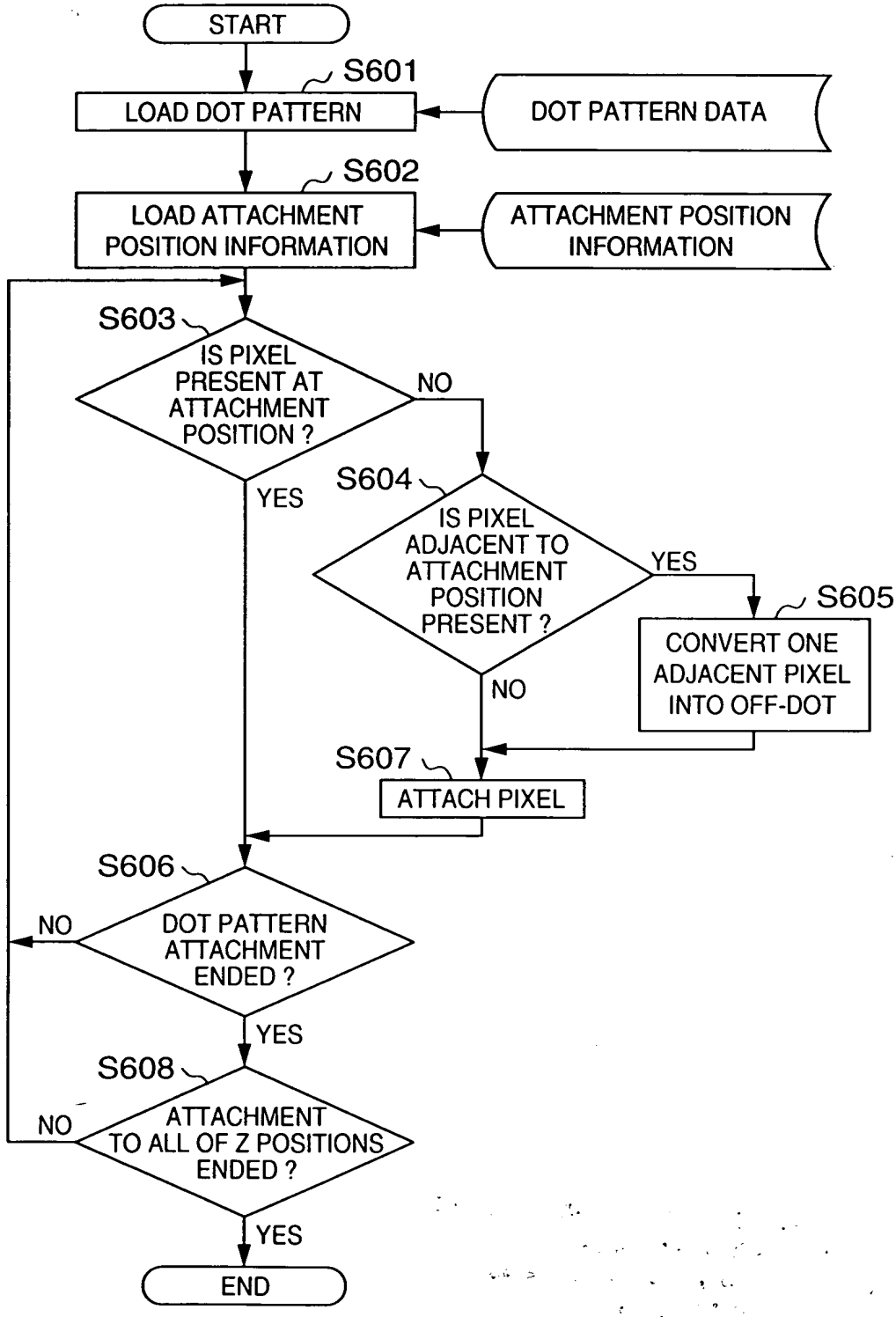
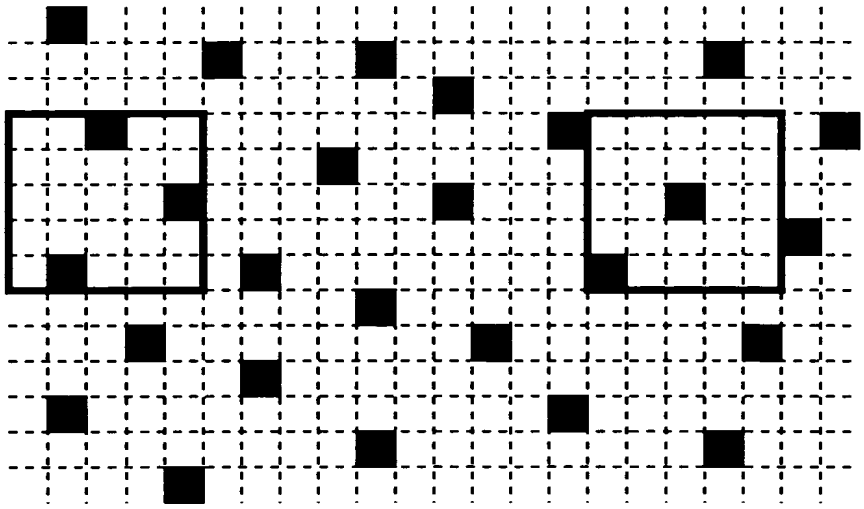


FIG. 91A

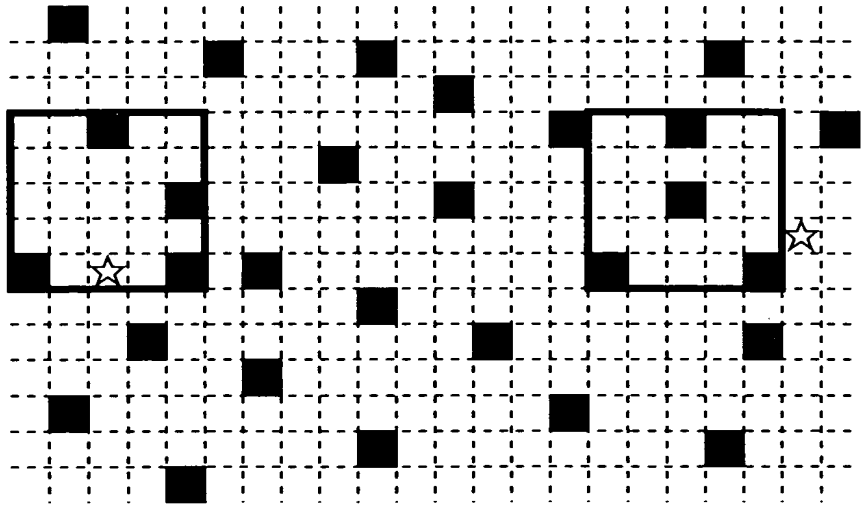
IMAGE BEFORE DOT PATTERN ATTACHMENT



□ : DOT PATTERN ATTACHMENT REGION

FIG. 91B

IMAGE AFTER DOT PATTERN ATTACHMENT



☆ : PIXEL CONVERTED INTO OFF-DOT

□ : DOT PATTERN ATTACHMENT REGION

FIG. 92

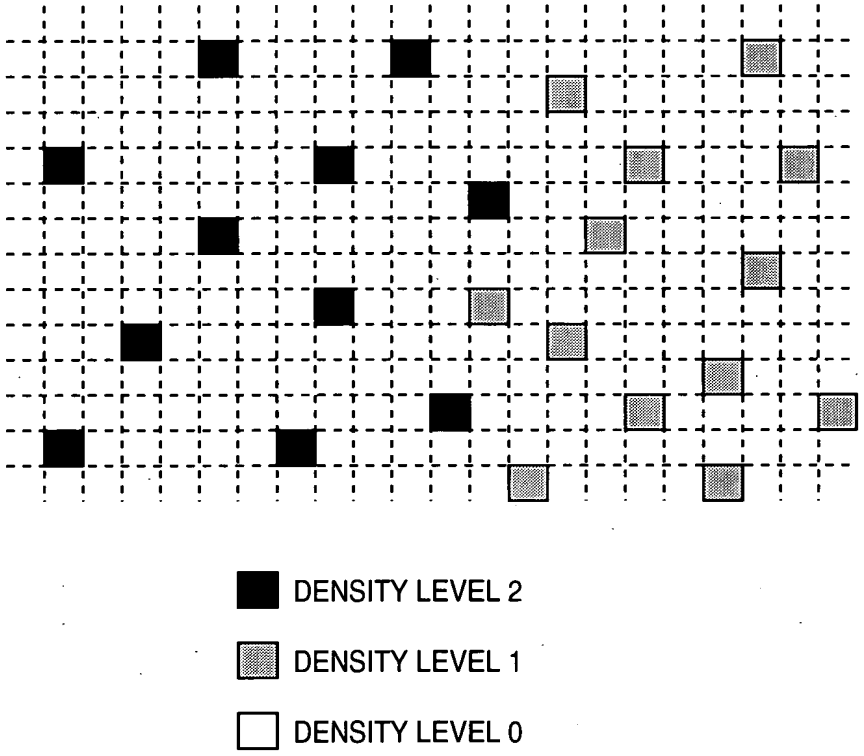


FIG. 93

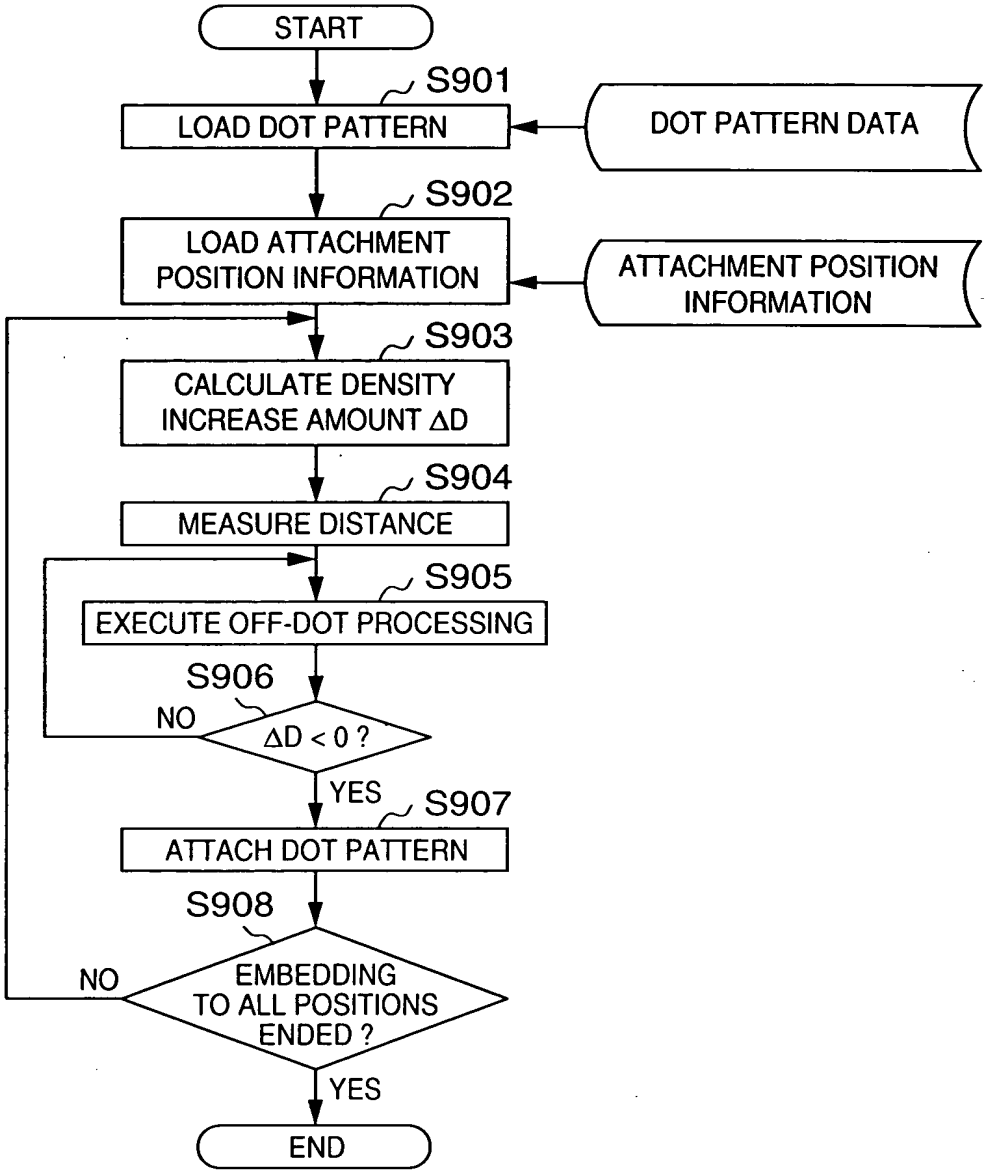
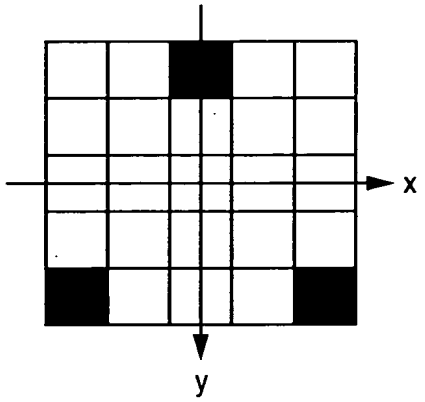


FIG. 94



PIXEL COUNT M OF PATTERN	3
DENSITY LEVEL V	2
NUMBER m	PIXEL POSITION (Px^m, Py^m)
1	(0, –2)
2	(–2, 2)
3	(2, 2)

FIG. 95

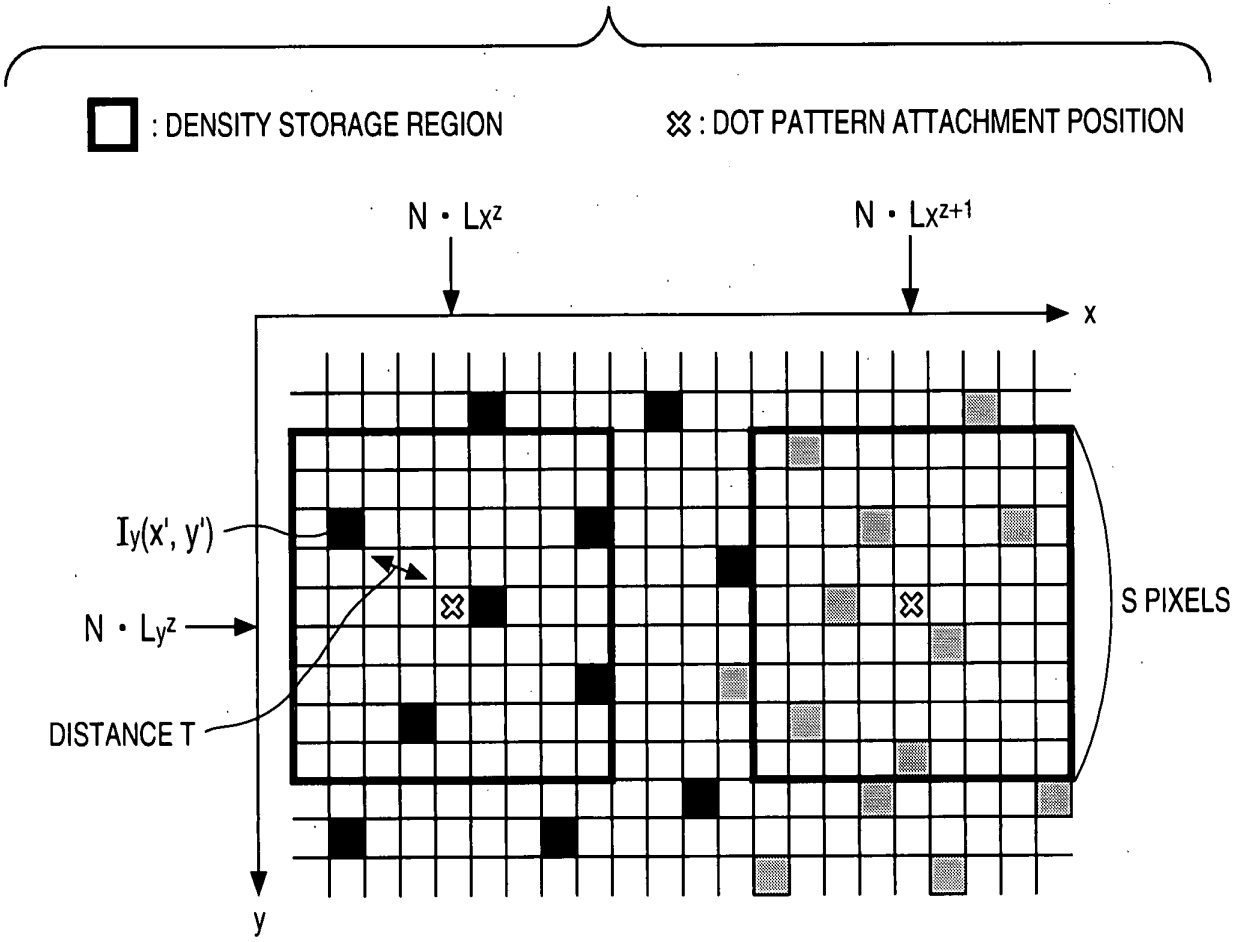


FIG. 96A

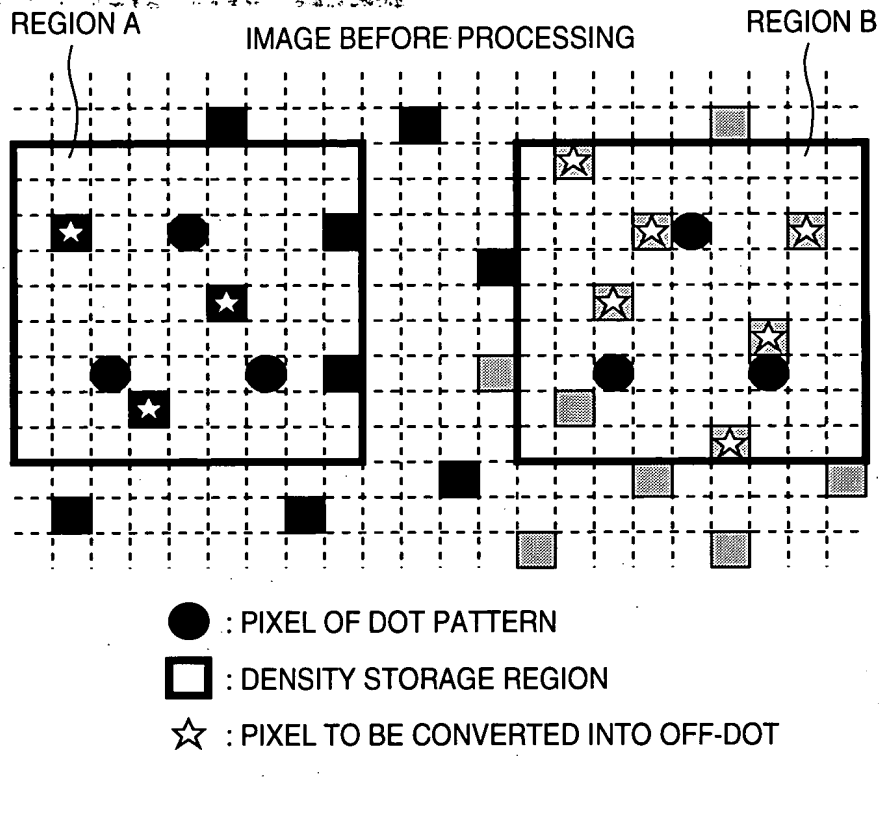


FIG. 96B

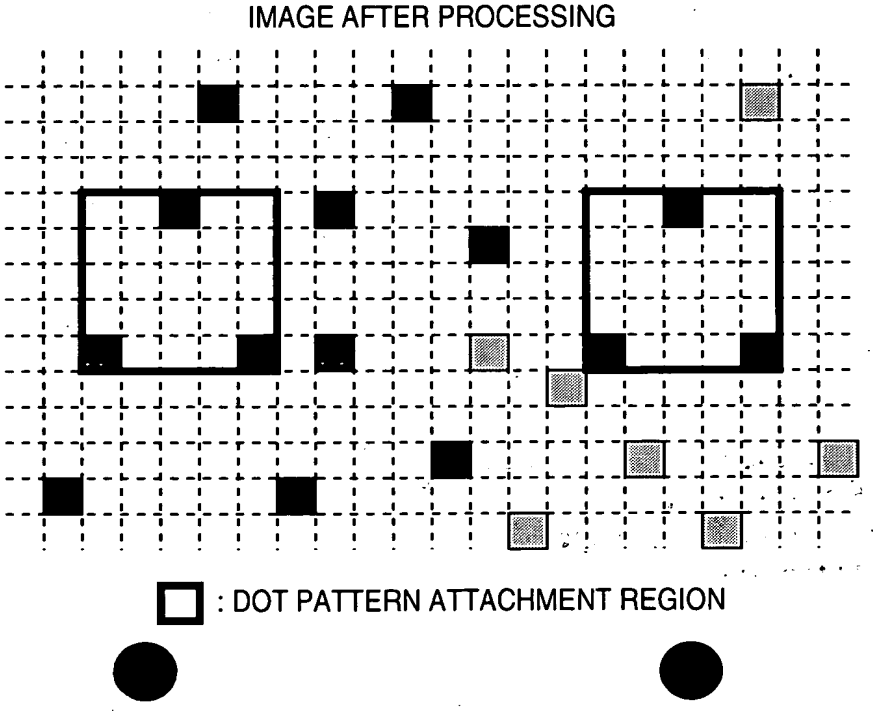
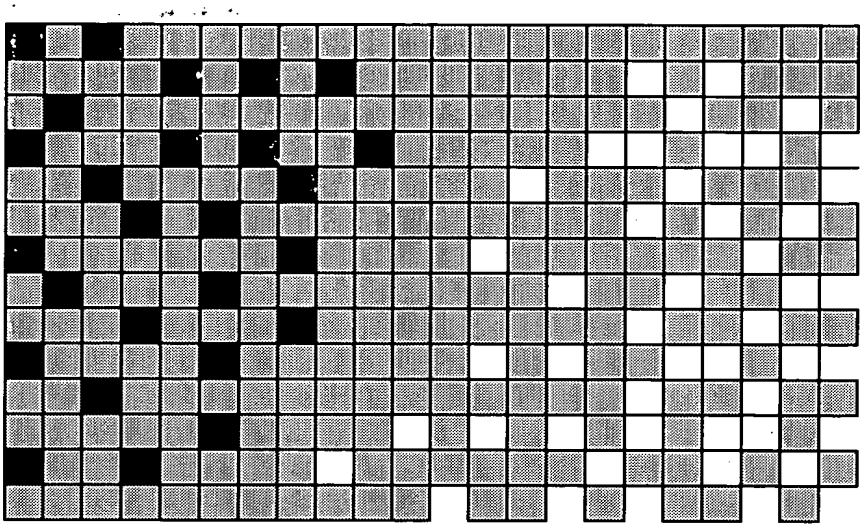


FIG. 97



■ : DENSITY LEVEL 2

▒ : DENSITY LEVEL 1

□ : DENSITY LEVEL 0

FIG. 98

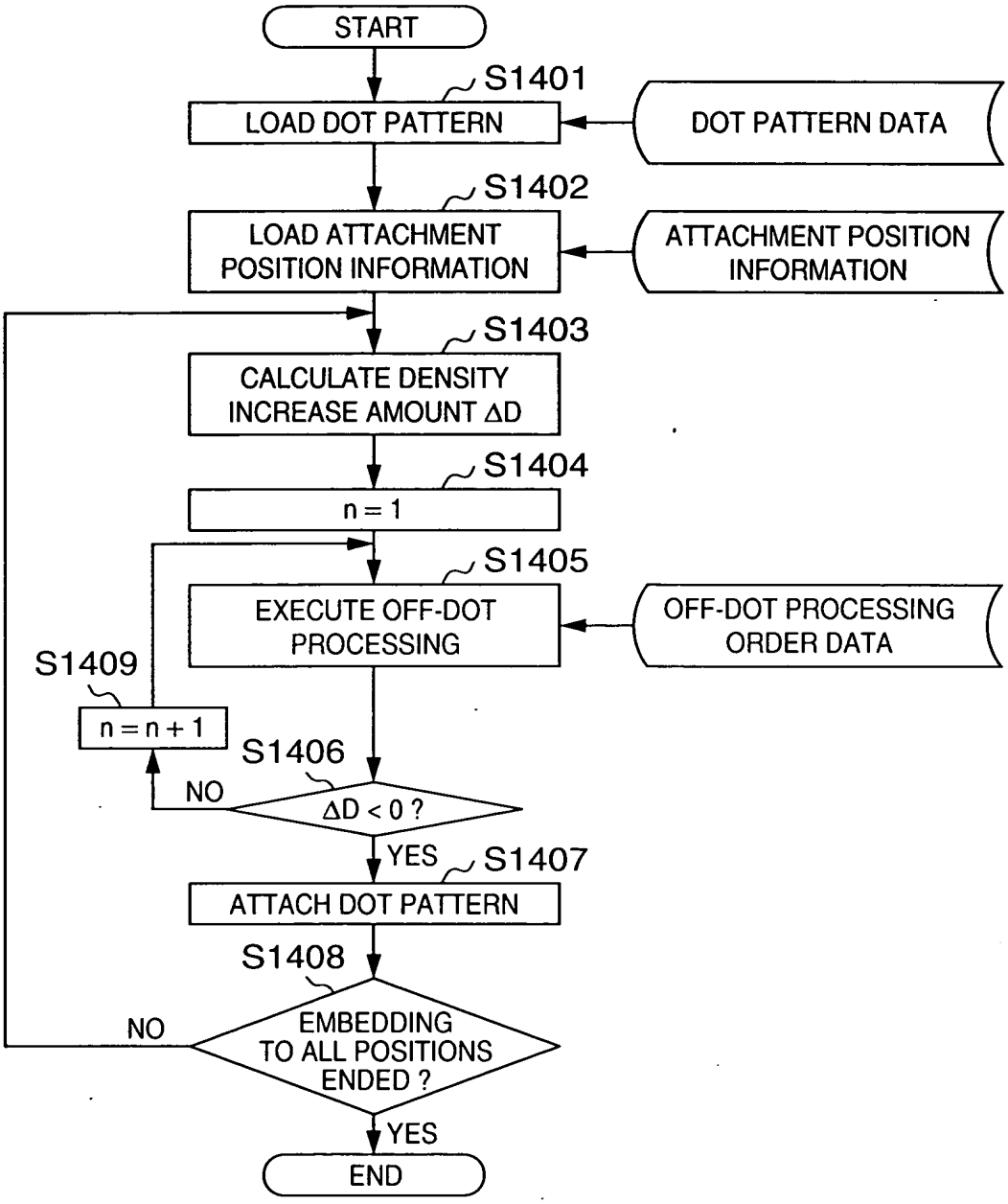

START
S1401
LOAD DOT PATTERN
DOT PATTERN DATA
S1402
LOAD ATTACHMENT POSITION INFORMATION
ATTACHMENT POSITION INFORMATION
S1403
CALCULATE DENSITY INCREASE AMOUNT ΔD
S1404
n = 1
S1405
EXECUTE OFF-DOT PROCESSING
OFF-DOT PROCESSING ORDER DATA
S1409
n = n + 1
S1406
NO
ΔD < 0 ?
YES
S1407
ATTACH DOT PATTERN
S1408
NO
EMBEDDING TO ALL POSITIONS ENDED ?
YES
END

FIG. 99

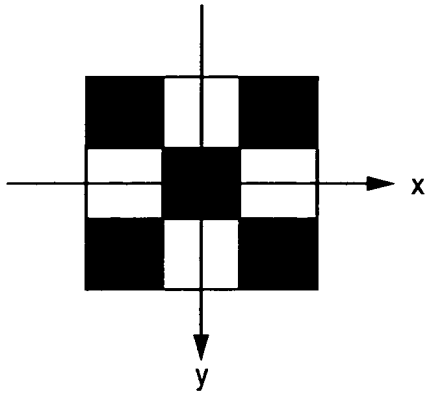


FIG. 100

PIXEL COUNT M OF PATTERN	5
DENSITY LEVEL V	2
NUMBER m	PIXEL POSITION (Px^m, Px^m)
1	(0, 0)
2	(1, 1)
3	(1, –1)
4	(–1, 1)
5	(–1, –1)

FIG. 101

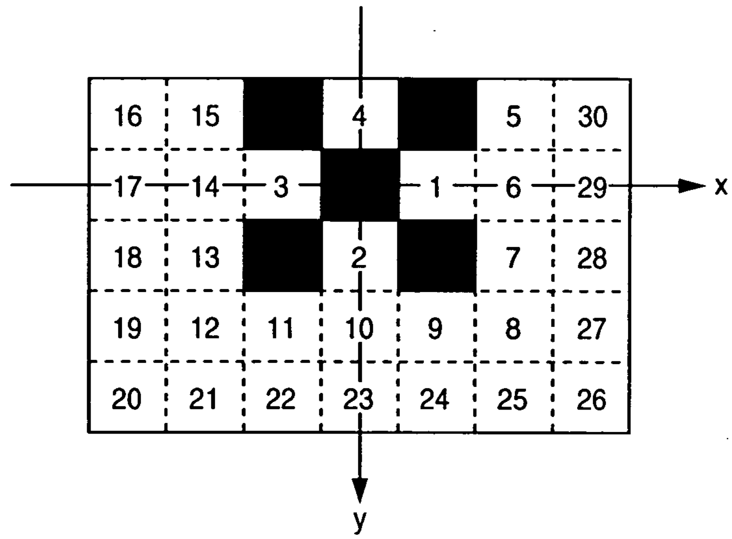
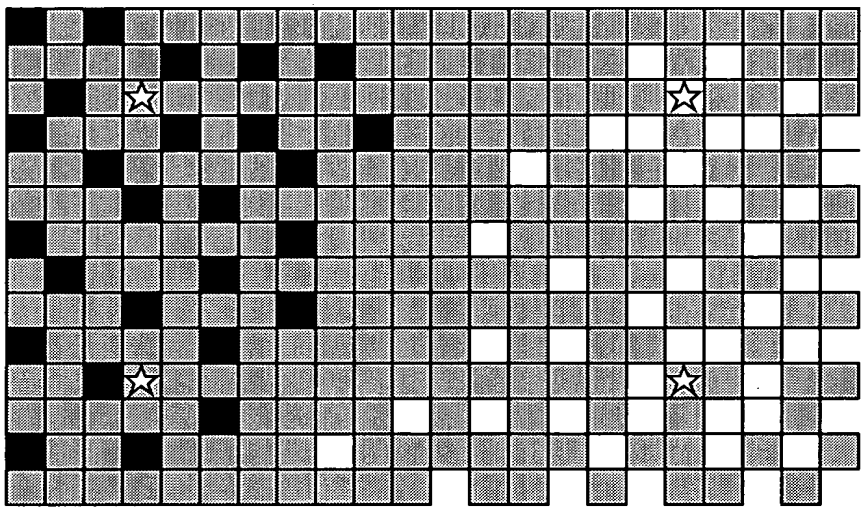


FIG. 102

NUMBER n	COORDINATES (Rx^n, Ry^n)
1	(1, 0)
2	(0, 1)
3	(−1, 0)
4	(0, −1)
⋮	⋮
30	(3, −1)

FIG. 103A

BEFORE PROCESSING



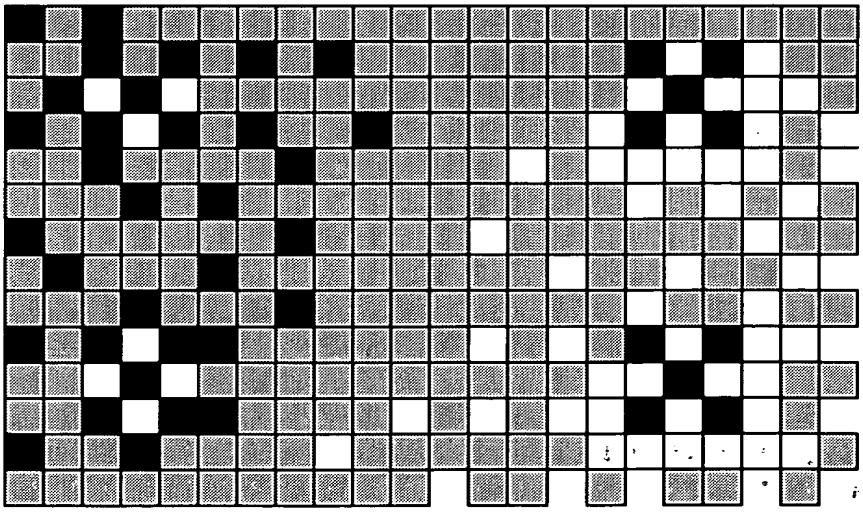
: DENSITY LEVEL 1

: DENSITY LEVEL 2

☆ : DOT PATTERN ATTACHMENT POSITION

FIG. 103B

AFTER PROCESSING



: DENSITY LEVEL 1

: DENSITY LEVEL 2

FIG. 104

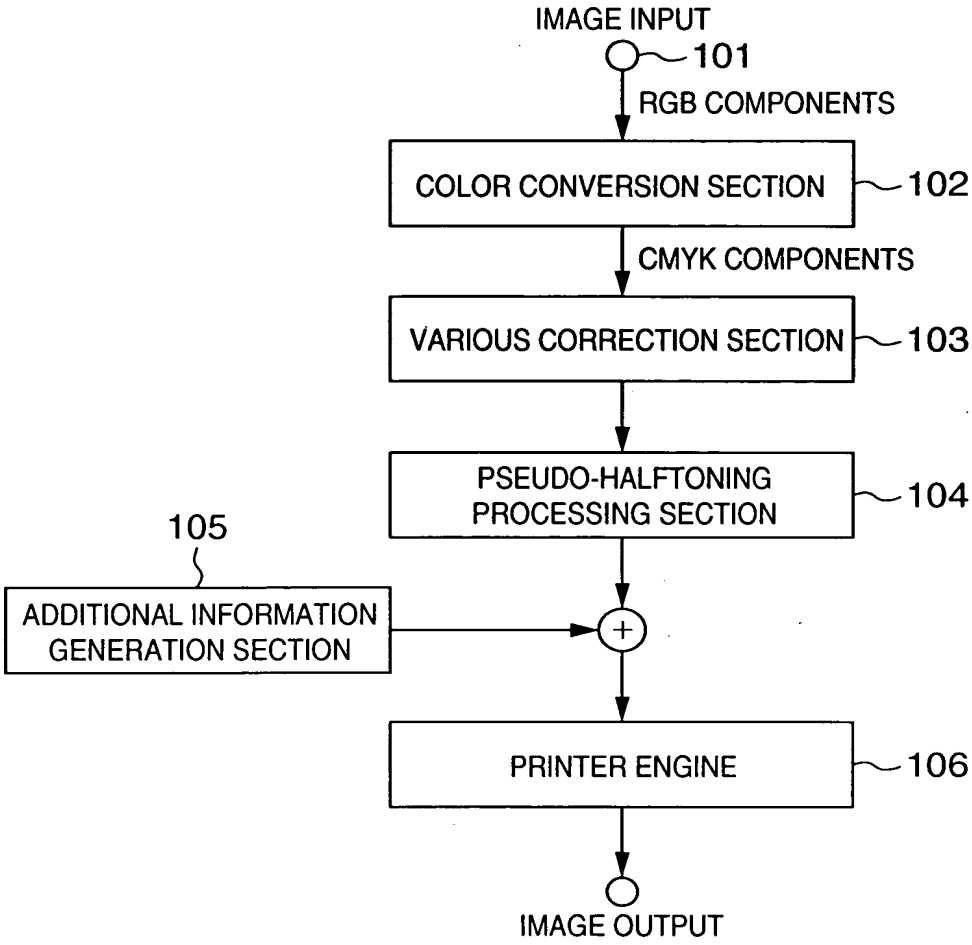


FIG. 105

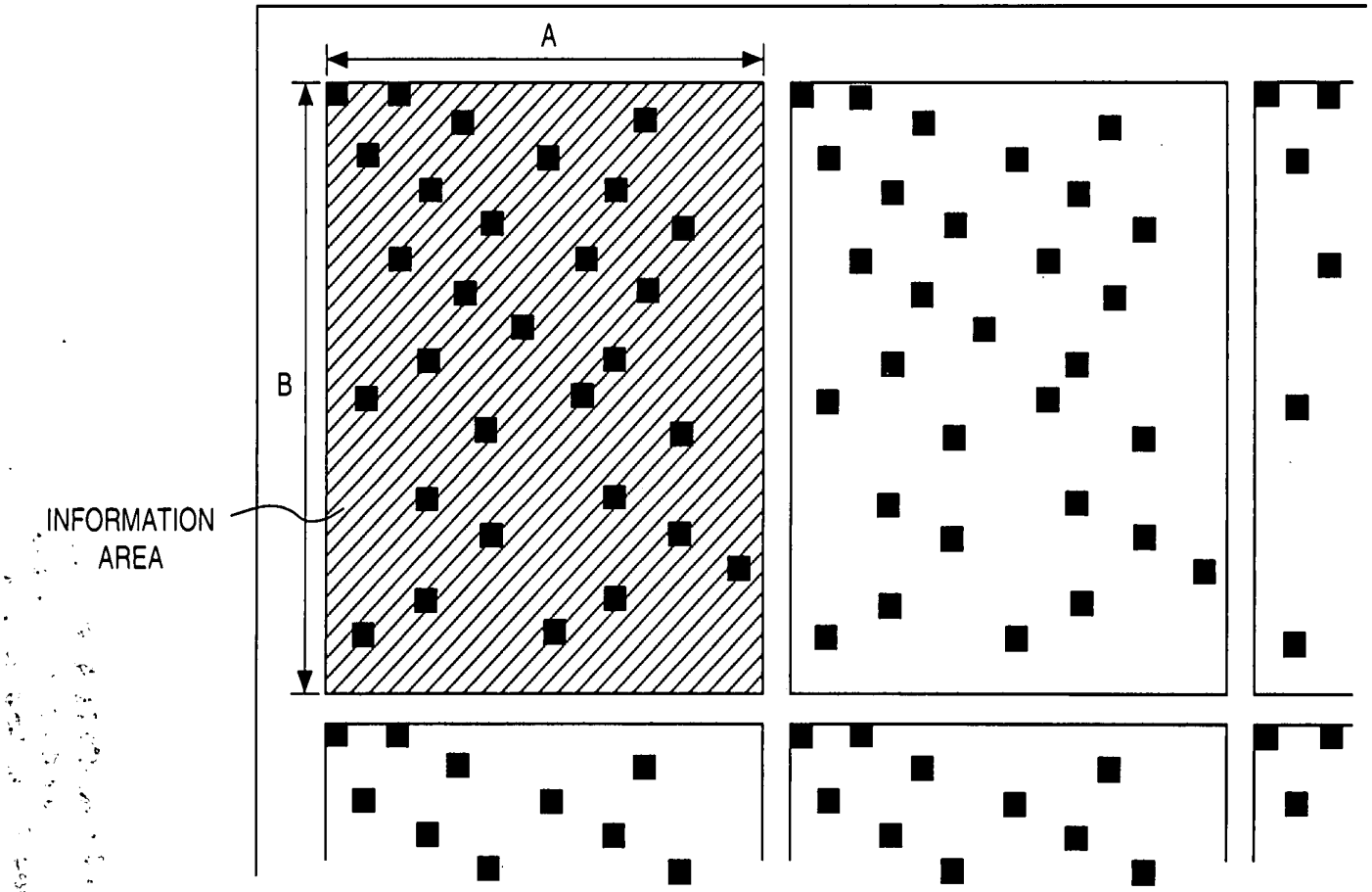


FIG. 106

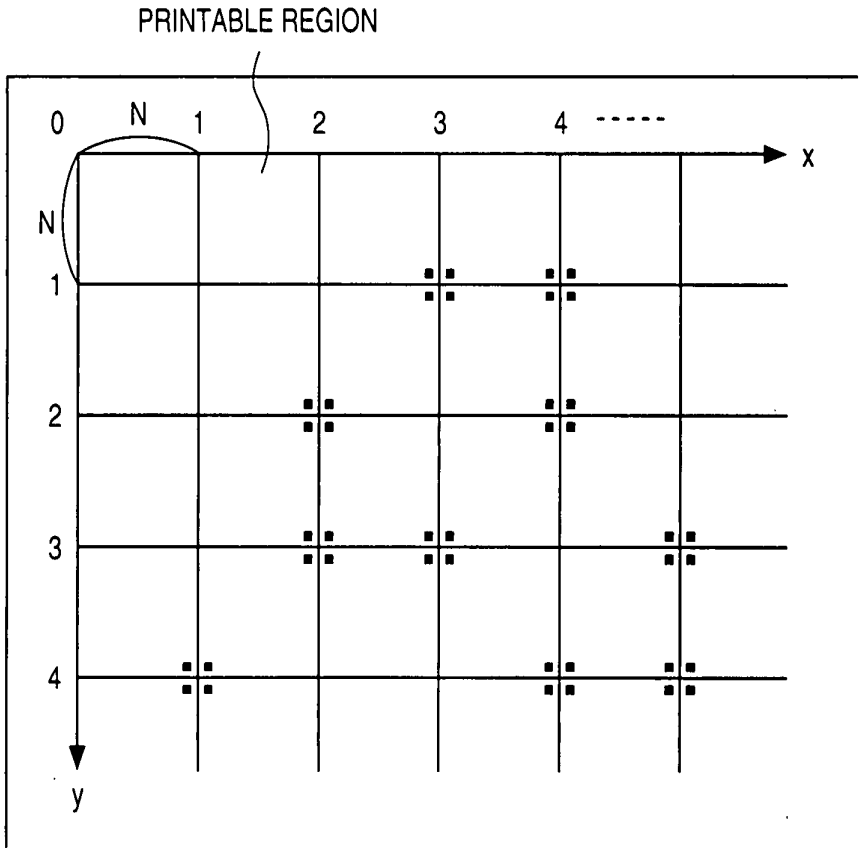


FIG. 107

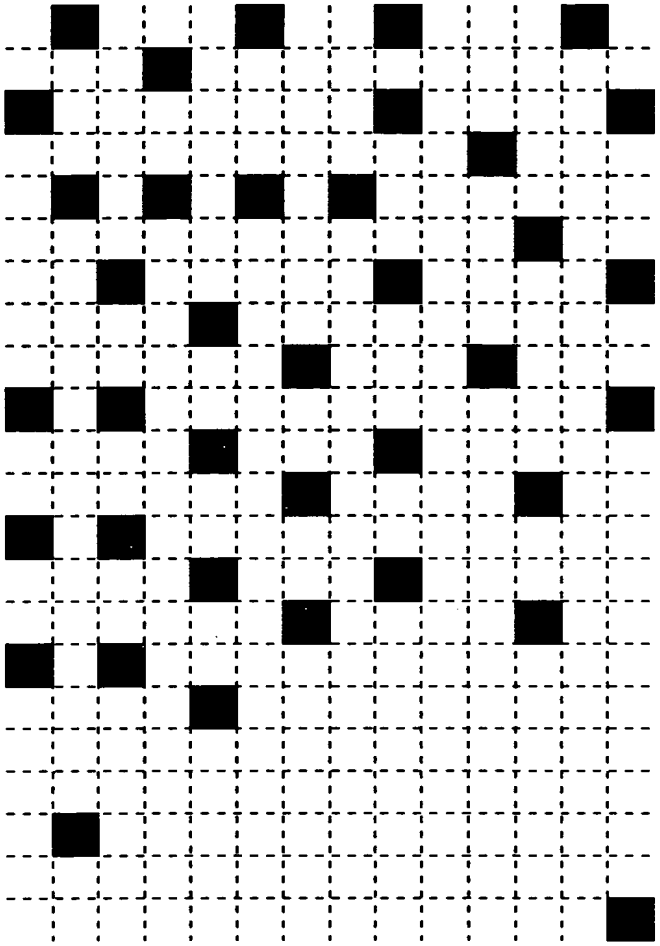


FIG. 108

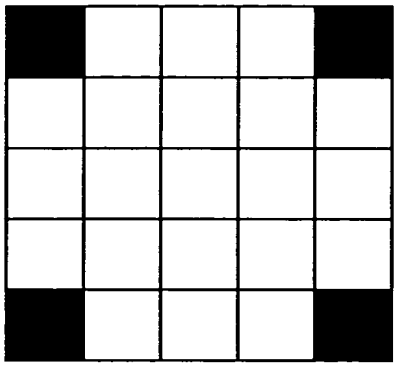


FIG. 109

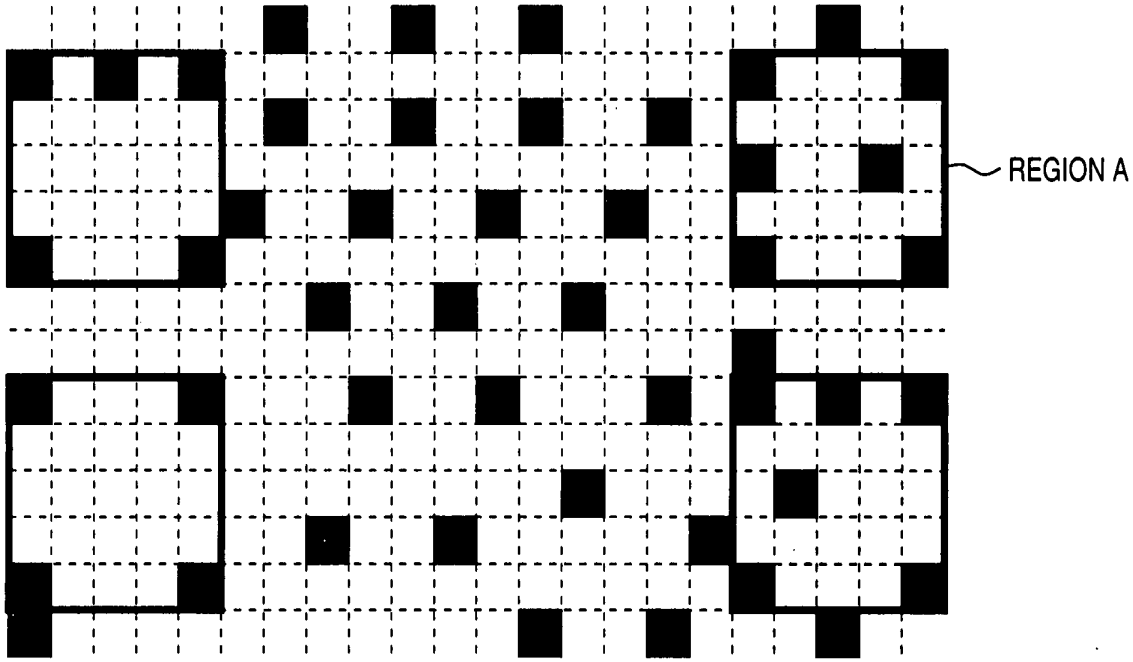


FIG. 110

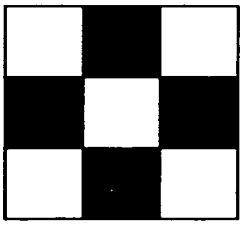


FIG. 111

FIG. 112

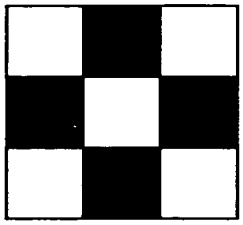


FIG. 113

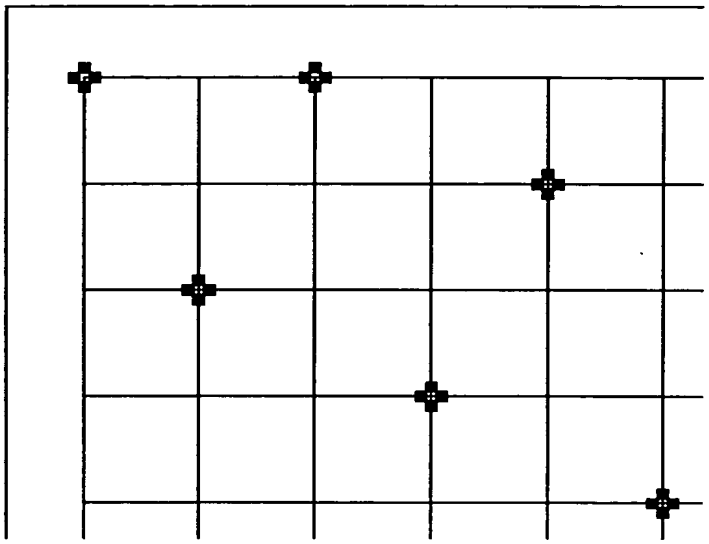


FIG. 114A

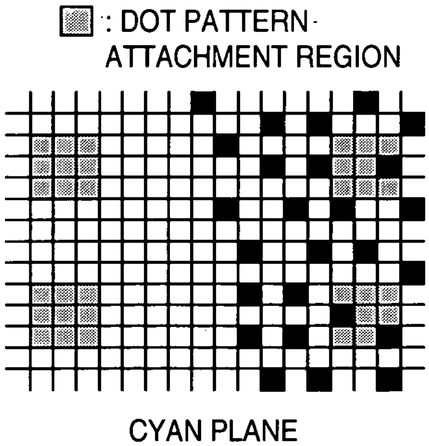


FIG. 114B

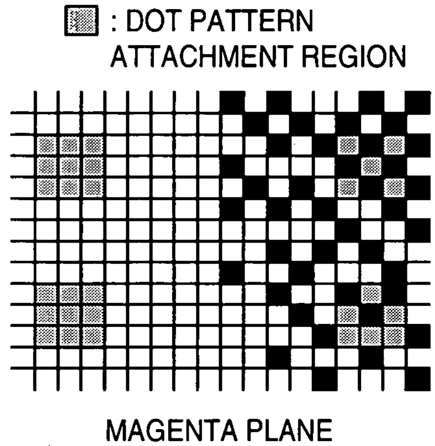


FIG. 114C

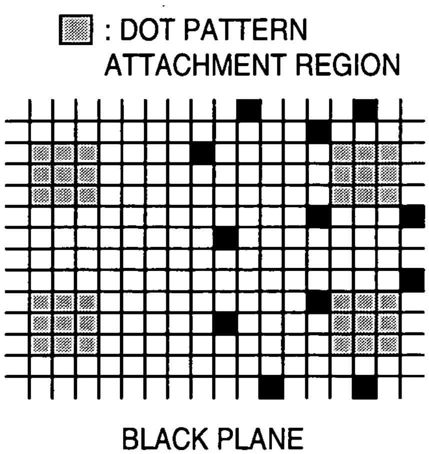


FIG. 114D

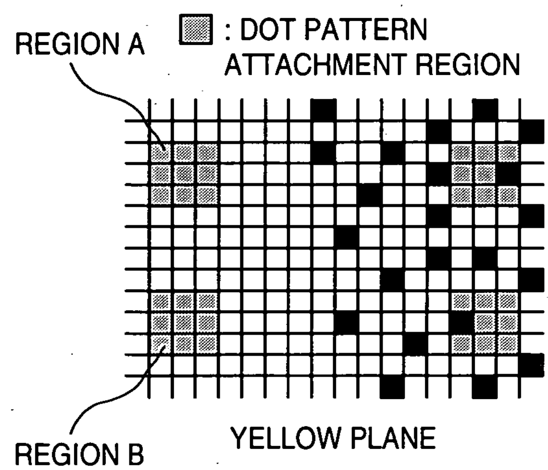


FIG. 115